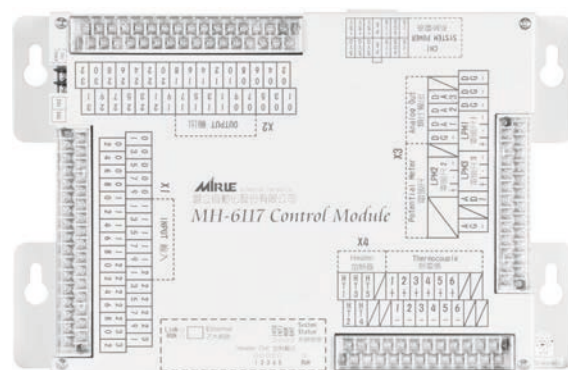


# MH-6117 Controller





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# **CHAPTER - 1**

## **System Specification**

1.1 - Standard Configuration

1.2 - Hardware Configuration And Mounting Dimension

1.3 - Software Function

## 1.1 - STANDARD CONFIGURATION

- MH6117 Control Module (PLC)
- MH6117 Operating Controller (HMI Board)
- Proportional (PQ) Card
- Emergency Push Button
- Ethernet Cable (Communication Cable)
- Power Supply (Input 230Vac Output 5-15Vdc)
- Power Supply (Input 230Vac Output 24Vdc / 15Amp)

## 1.2 - HARDWARE CONFIGURATION

### MH6117 Control Module (PLC)

- Display unit CPU : ARM9 266 Mhz 32 bits
- Control unit CPU : RISC 140 Mhz 32 bits
- 6 Zone PID Temperature Sensor input
- 5 Zone Heater Output (NPN)
- 3 Linear Potentiometer Input (16bit)
- 1 Analog Input (Pressure Transducer)
- 3 Digital to Analog Output (16bit)
- 32 Digital Input (NPN)
- 32 Digital Output (NPN)

### MH6117 Operating Controller (HMI Board)

- Display unit CPU : ARM9 266 Mhz 32 bits
- 7.4" 800 X 400 TFT LCD Long Screen
- LED Backlight
- 1 USB Interface

## 1.3 - SOFTWARE FUNCTION

### Temperature Page

- 5 Zone Barrel Temperature Set
- 1 Zone Oil Temperature Set
- 5 Zone Barrel Temperature High-Low Tolerance Set
- 1 Zone Oil Temperature High Tolerance Set
- Nozzle Duty Function

### Mold Open Close Page

- 5 Stage Mold Close Parameter
- 5 Stage Mold Open Parameter
- Low Pressure, High Pressure, Mold Open Protection Timer
- Mold Adjustment Thick And Thin, Mold Open Close Parameter

### Injection - Charge Page

- 3 Stage Injection Parameter
- 2 Stage Injection Hold Parameter
- 2 Stage Charge Parameter
- 2 Stage Pre Suckback And Suckback Parameter
- Injection Mode Selection
- Suckback Mode Selection
- Injection - Charge Protection Timer
- Cooling Time

### Ejector - Air Ejector - Auto Lubrication Page

- 2 Stage Ejector Advance Parameter
- 2 Stage Ejector Retract Parameter
- Ejector Mode Selection
- Ejector Number
- Air Ejector Parameter
- Auto Lubrication Parameter

### Carriage - Auto Purge Page

- 2 Stage Carriage Advance Parameter
- 2 Stage Carriage Retract Parameter
- Carriage Retract Selection
- Carriage Retract Protection Time
- Carriage Load Function
- Auto Purge On/Off Selection
- Auto Purge Number
- Auto Purge Parameter

### Core Page

- 2 Core Parameter
- Function + Timer Page Jump (Password Protect)

### Special Features

- 3 Layer Password Protection
- 120 Mold File Memory
- Quality Record
- Alarm Message
- Modify Record
- Input - Output Status
- Production Record
- Real - Time Display
- Temperature Curve Graph

# **CHAPTER - 2**

## **OPERATING PANEL DESCRIPTION**

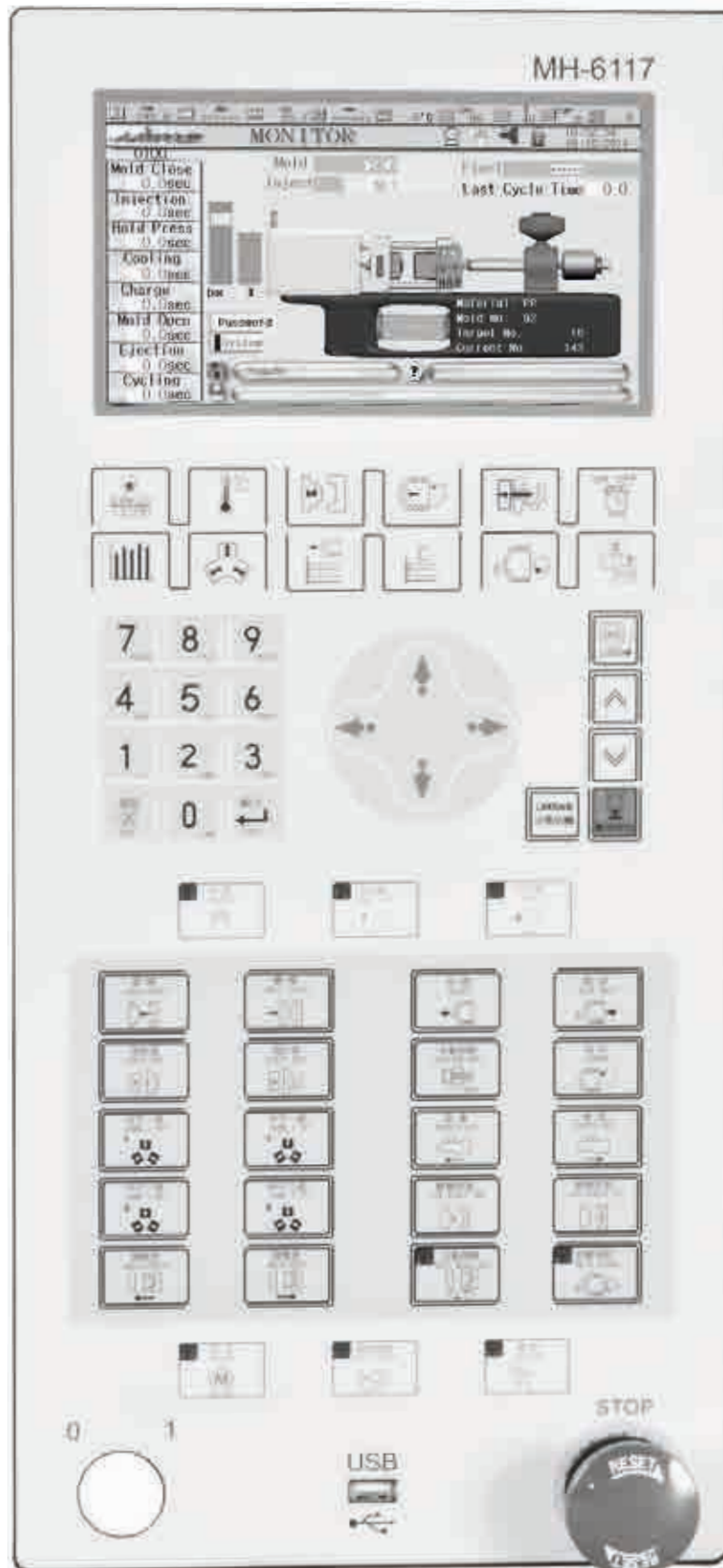
2.1 - Screen Selector

2.2 - Cursor And Numeric Key

2.3 - Operating Mode Selection

2.4 - Manual Operation Key

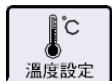
# HMI OPERATING PANEL



## 2.1 - SCREEN SELECTOR



Monitor Key (Actual Temperature, Actual Cycle Time, Actual Pressure & Flow)



Temperature Key ( Set Temperature Parameter)



Mold Key (Mold Open – Close And Mold Adjust Parameter)



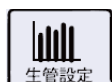
Injection Key (Injection Charge Parameter, Intrusion Page Selection)



Ejector Key (Ejector, Air Ejector, Auto Lubrication Parameter)



On-Off Key (Quality Record, Input – Output Status, Alarm Message, Modify Record)



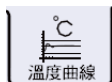
Production Key (Production Record)



Core Key (Core Parameter, Fun + Timer Page Selection)



Inject Curve Key ( Injection And Cusion Curve)



Temperature Curve Key ( Temperature Curve)



Carriage Key (Carriage Parameter, Auto Purge Parameter)



Mold File Key (Mold File Save Parameter)



## 2.2 - CURSOR AND NUMERIC KEY



Cursor Key (To Move Cursor Up-Down And Left-Right)



Numeric Keys (To Enter Numeric Number And Alphabet)



Enter Key



Clear Key



Reset Key (To Reset Alarm)



Language Key (To Change Language)



USB Key (To Take Screen SnapShoot)



Cursor Moving upward



Cursor Moving downward



Cursor Moving leftward



Cursor Moving rightward

## 2.3 - OPERATING MODE SELECTOR



Manual Key (To Operate Machine In Manual Mode)



Semi Auto Key (To Operate Machine In Semi Auto Mode)



Auto Key (To Operate Machine In Auto Mode)



Motor Key (To Start and Stop Motor)



Mold Setup Key (To Adjust Die Height)



Heater Key (To Start and Stop Heater)

## 2.4 - MANUAL OPERATION KEY



Mold Close Key



Mold Open Key



Injection Key



Charge Key



Suckback Key



Eject Adv. Key



Eject Ret. Key



Carriage (Unit) Adv. Key



Carriage (Unit) Ret. Key



Core 1 In Key



Core 1 Out Key



Core 2 In Key



Core 2 Out Key



Air Eject Key From Mold Moving Side



Air Eject Key From Mold Fix Side



Mold Thin Key



Mold Thick Key



Auto Mold Setup Key



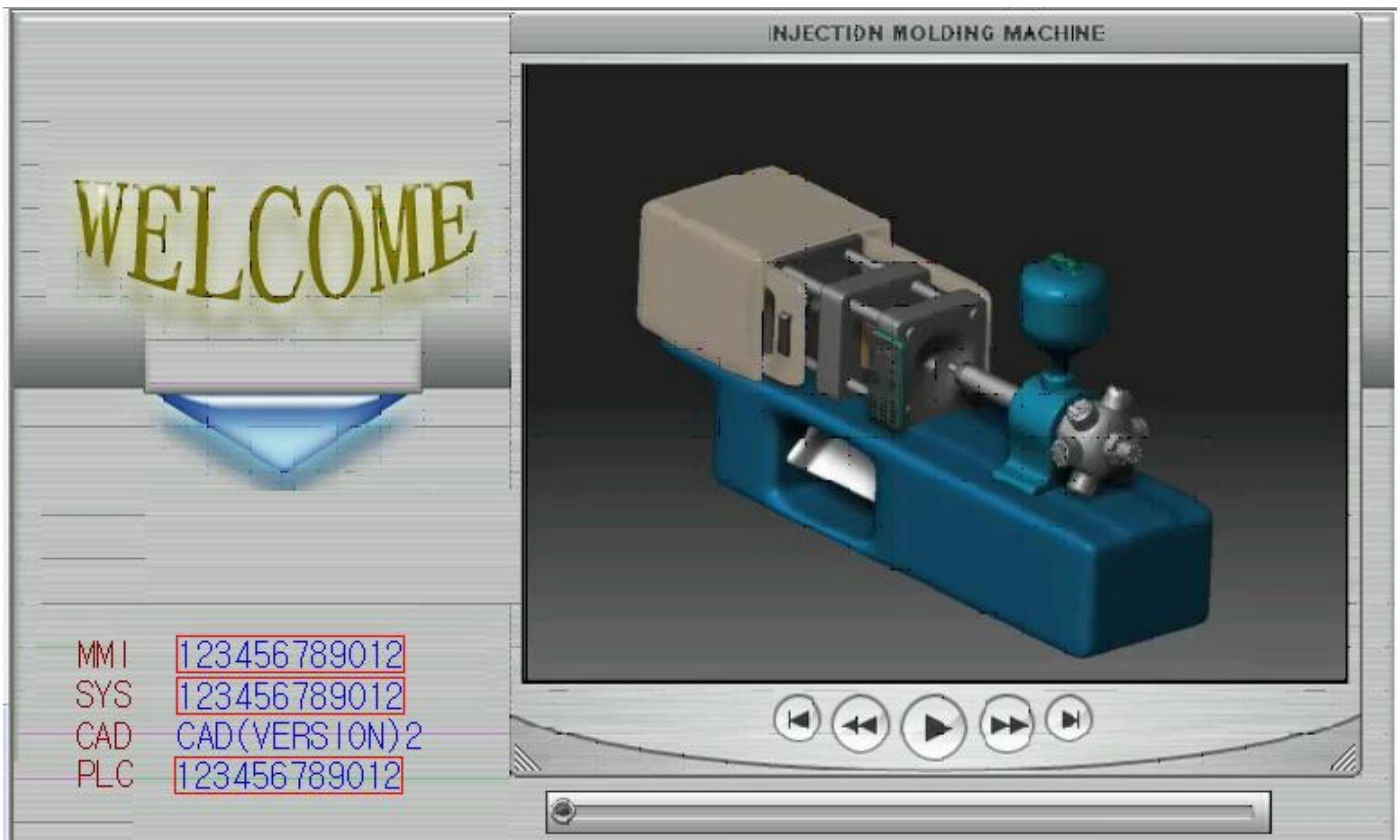
Auto Purge Key

## **CHAPTER - 3**

### **SCREEN OPERATION DESCRIPTION**

- 3.01 - Wel Come Page
- 3.02 - Monitor Page
- 3.03 - Temperature Page
- 3.04 - Mold Open Close Page
- 3.05 - Injection Charge Page
- 3.06 - Ejector And Auto Purge Page
- 3.07 - Quality And Input-Output Status Page
- 3.08 - Production Page
- 3.09 - Core Page
- 3.10 - Carriage (Injection Unit) Page
- 3.10 - Mold File Page

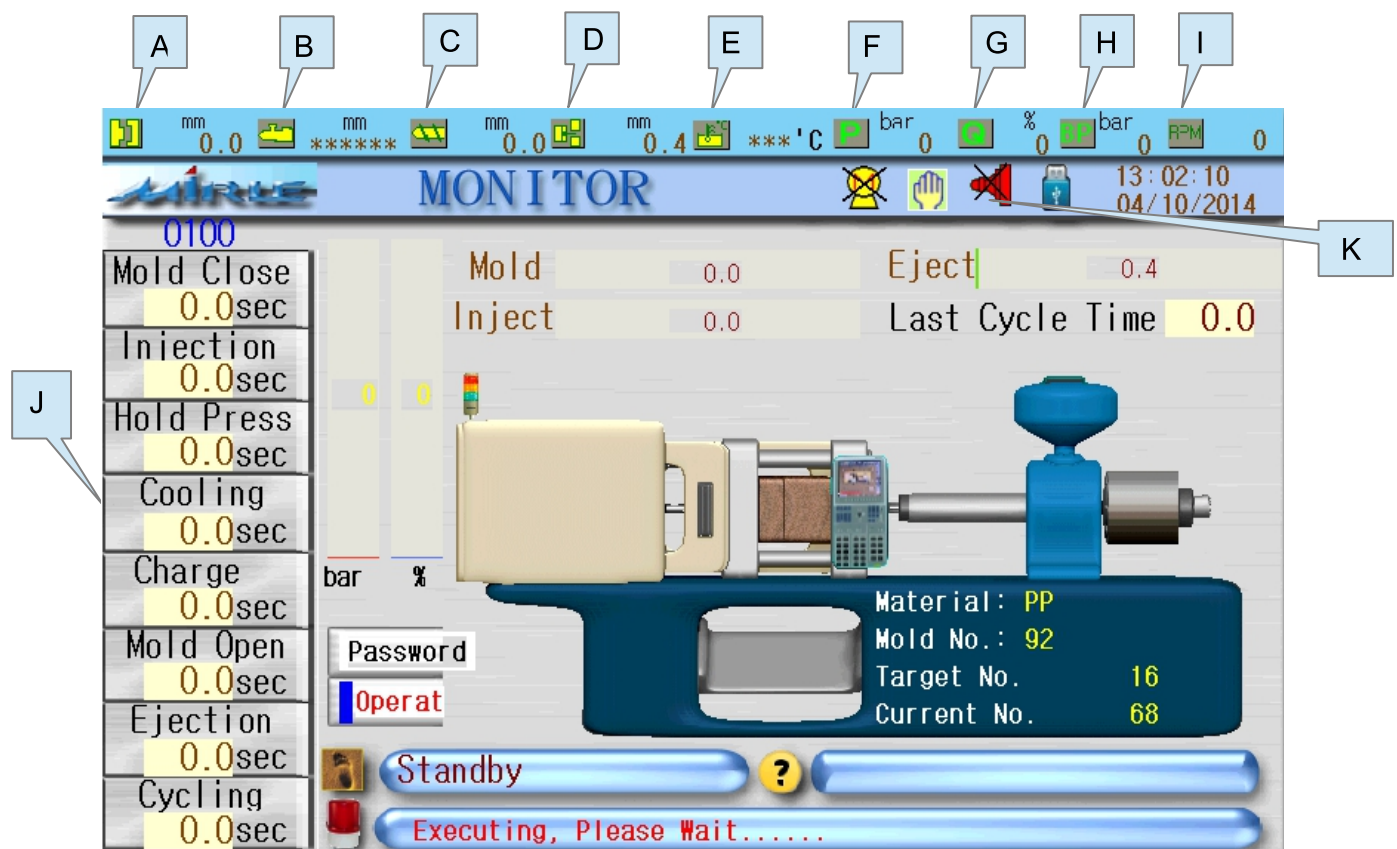
## 3.01 - WEL COME PAGE



- A) Left-down corner of initial page show the version of machine programs, Including MMI  
(Man Machine Interface program) • SYS(SYSTEM Program) • CAD(winCAD program) • PLC(PLC ladder program).
- B) After completing the system testing, the lower part will display the results to see if the system testing was normal or unusual. Moving on to press [ENT]key to enter < Machine Monitoring > page.

**Note :** If system testing not complete than check communication cable or system power supply

### 3.02 - MONITOR PAGE - 0100



A) Mold Position In mm.

B) Carriage Position In mm.

C) Injection Position In mm.

D) Ejector Position In mm.

E) Oil Temperature.

F) Pressure Command.

G) Flow Command.

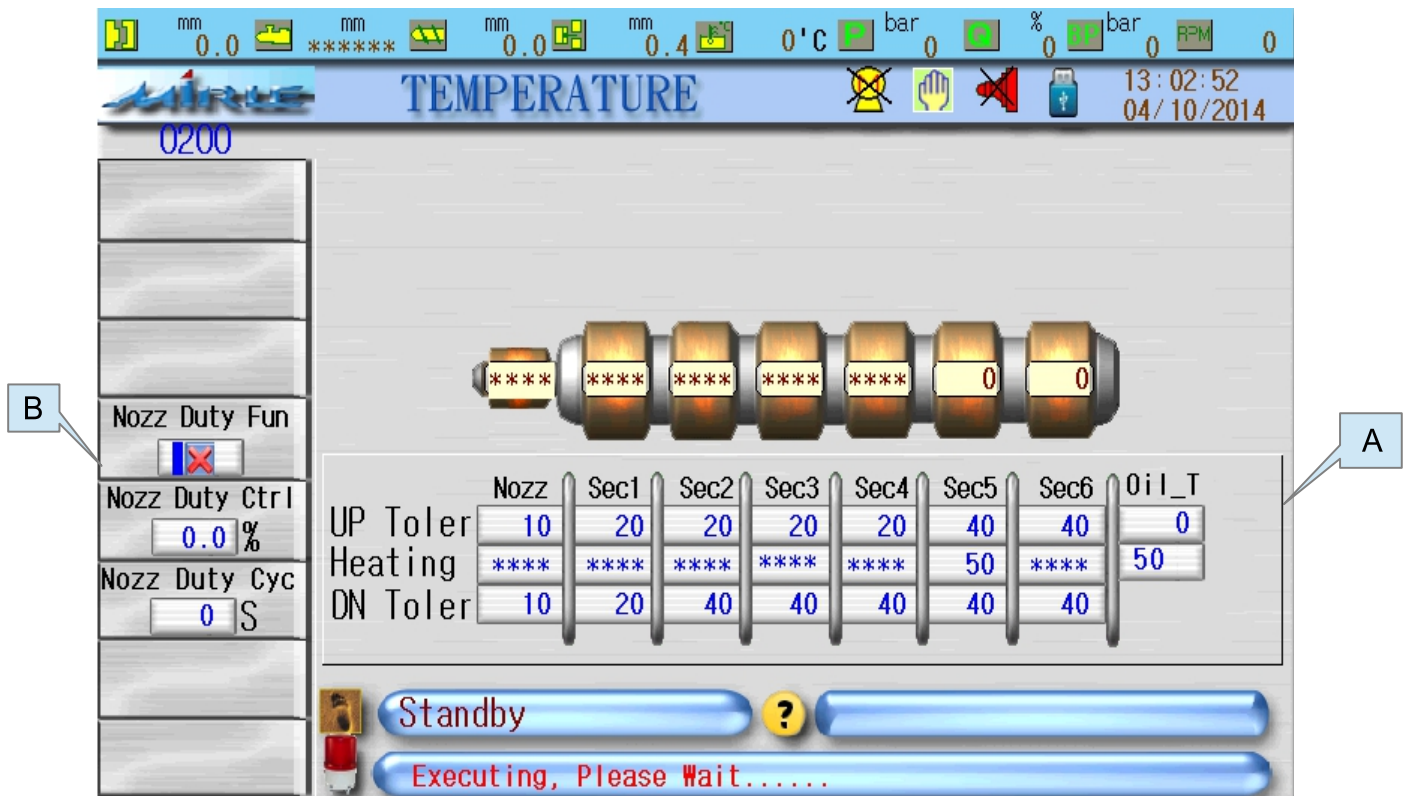
H) Back Pressure Command.

I) Screw RPM.

J) Actual Time.(Mold Close, Injection, Hold, Cooling, Charge, Mold Open, Ejector, Total Cycle).

K) Status Of Motor On/Off, Manual Semi-Auto Auto Cycle, Heater On/Off, USB Detect.

## 3.03 - TEMPERATURE PAGE - 0200



This page introduce the setting of temperature, details as following :

#### A) TEMPERATURE SETTING SCREEN :

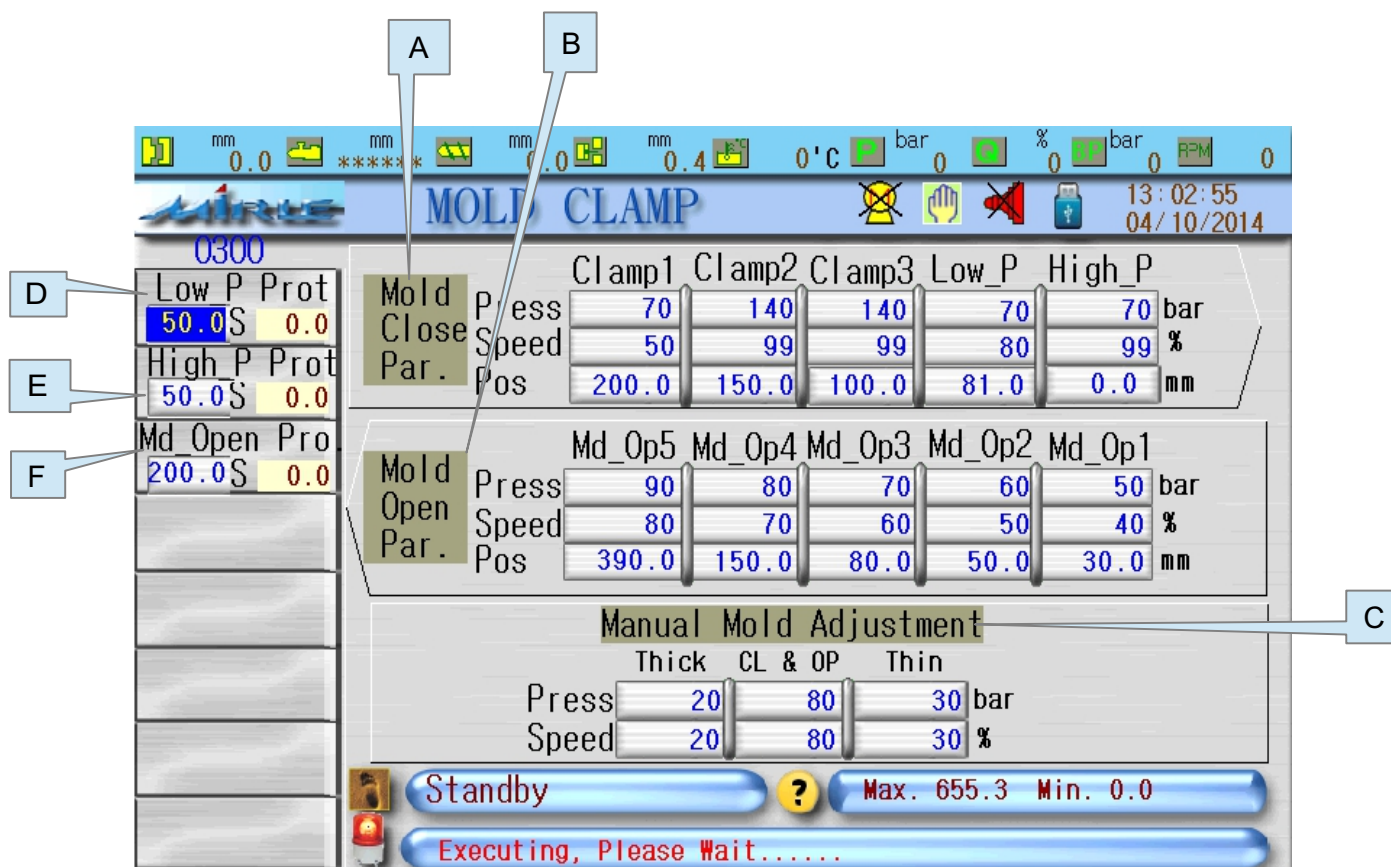
This screen was designed to set those values related to each section of the barrel, which including: heating values upper-deviation lower-deviation . . . etc. If to press (CLR) button any section in **"Heating Values"** The setting value will display as \*\*\*\*, Which means this section only display the temperature which has been measured, not to be controlled. **"UP-tol."** When the temperature of any section of the tube is higher than (setting value + UP-tolerance) high temperature deviation alarm will occur. **"DN-tol."** : When the temperature of any section of the tube is lower than (setting value - DN-tolerance) Low temperature deviation alarm will occur.

**Note :** When heating system switch on and the temperature of every section of the barrel higher/lower than (setting value - DN-tolerance + Up-tolerance) both high / low temperature deviation alarm will start to detect.

#### B) NOZZLE DUTY FUNCTION :

This is to set up the cycle time and duty percentage which nozzle is controlled under the same temperature status.

### 3.04 - MOLD OPEN CLOSE PAGE - 0300



This page introduce the setting of mold clamp, details as following :

#### A) MOLD CLOSE PARAMETER :

It provides data entry of pressure, speed and position, five sections in total including : [Clamp 1] • [Clamp 2] • [Clamp 3] • [Low\_P] • [High\_P]. When the final position of mold clamping setting during mold moving process to be 200.0 • 150.0 • 60.0 • 30.0 • 0.0 [Clamp 1] • [Clamp 2] • [Clamp 3] • [Low\_P] • [High\_P]. In other words, these values are set to be each section's targeting position, above screen showed the map of related position in order: [Clamp 1] ≥ [Clamp 2] ≥ [Clamp 3] ≥ [Low\_P] ≥ [High\_P]

#### B) MOLD OPEN PARAMETER :

Mold Open also provides data key in columns which divided into five sections from [Md\_Op1] • [Md\_Op2] • [Md\_Op3] • [Md\_Op4] • [Md\_Op5], it also provides the corresponding pressure, speed, position setting to each section which is the same designed as Mold Clamp. In order to protect the mold and to increase the final positioning accuracy of the mold opening, the end section of mold opening has a function which to force reducing the speed. Related position in order: [Md\_Op1] ≤ [Md\_Op2] ≤ [Md\_Op3] ≤ [Md\_Op4] ≤ [Md\_Op5].

#### C) MANUAL MOLD ADJUSTMENT :

To adjust pressure and flow of moving platen and die height platen in manual mode.

#### D) LOW P\_ PROT :

Low pressure protect time work between clamp 3 to low\_p position . If low pressure position not achieve in set time than error comes and mold open automatic.



**E) HIGH P\_ PROT :**

High pressure protect time work between low\_p to high\_p position . If high pressure position not achieve in set time than error comes and mold open automatic.

**F) MD\_OPEN PROT :**

Mold pressure protect time work between Md op1 to Md op5 . If mold open-5 position not achieve in set time than error comes.

**3.05 - INJECTION CHARGE PAGE - 0400**

**INJECT/CHARGE**

0400

**Inject Mode** (A)

**Position** (B)

**Skback Mode** (C)

**SuckBk** (D)

**Cooling TM** (E)

**Inj. Prot** (F)

**Charge Prot** (G)

**Intrusion** (H)

	Inj3	Inj2	Inj1	
Press	50	20	100	bar
Speed	50	20	80	%
Pos	*****	5.0	10.0	mm
Time	0.0	0.0	3.0	Sec

	Hold2	Hold1	
Press	20	60	bar
Speed	30	50	%
Time	0.0	0.5	Sec

	Presck	Charg1	Charg2	SuckBk	
B.P.		20	20		bar
Press	50	30	20	50	bar
Speed	20	50	20	20	%
Pos	0.0	0.0	100.0	0.0	mm

Standby ?

Executing, Please Wait.....

This page introduce the setting of Inject/Charge, details as following :

**A) INJECT MODE :**

Three ways including " Pos (Position) " Time and " Pos+Time press (ENT) or (  $\approx$  ) Button to choose the transfer mode from injection to holding pressure process.

**B) SKBACK MODE :**

Press (ENT) or (  $\approx$  ) button to choose the suck back mode under bellowing 4 types : Standby • Presuck • Suckback and all . The screw would not suck back until it finishes the process of charge or cooling.

**C) COOLING TIME :**

Counting for cooling time products in molds need, stated after pressure maintenance. Above display column showed cooling time.

**D) INJ PROT :**

Injection protect time work in Injection position mode. If position not achieve in injection protect time error comes and machine go in manual mode.

## SCREEN OPERATION DESCRIPTION

### E) CHARGE PROT :

Charge protect time work in position mode. If position not achieve in charge protect time error comes and machine go in manual mode.

### F) INJECTION PARAMETER :

Set up pressure, flow and position which shared with another timer. When controlled with position", move cursor to unwanted injection section's corresponding position" field then press (CLR) button when " \* \* \* "is displayed, procure has been completed.

### G) INJECTION HOLD :

Pressure maintenance which can set up pressure/speed and time. Pressure maintenance time is 0.1 sec.

### H) CHARGE / SUCK BACK :

There are four columns : [Pre Suck back] [Charge 1] [Charge 2] [Suck back] in adding each of them could set up pressure, speed and position. There are two stages in adding materials majorly designed to change the speed of each section and to control the back pressure of adding actions to achieve high density of material and accurate position. Pre Suck back could be set to be 0 if not in use, the restrictions of position setting is as following : [Pre Suck back]  $\leq$  [Charge 1]  $\leq$  [Charge 2]  $\leq$  [ Suck Back ]

## 3.06 - EJECTOR AND AUTO PURGE PAGE - 0500

The screenshot displays the 'EJECT/AIR' control interface with the following details:

- Top Bar:** Displays various units (mm, bar, %, RPM) and a timestamp of 13:03:02 on 04/10/2014.
- Section A:** Eject Mode is set to 'Repeated'.
- Section B:** Eject Num. is set to 1.
- Section C:** Single\_Hold\_TM is set to 1.0 S.
- Section D:** Static Md Air is checked (indicated by a red 'X').
- Section E:** Moving Md Air is checked (indicated by a red 'X').
- Section F:** Eject Parameters table:
 

	EjRet2	EjRet1	EjAdv1	EjAdv2	Unit
Press	30	140	50	100	bar
Speed	30	99	50	0	%
Pos	10.0	50.0	50.0	80.0	mm
Time	3.0	0.0	3.0	0.0	sec
- Section G:** Auto Lubrication Parameters:
 

Parameter	Value	Unit
Auto Lubi Fun	Checked (Red X)	
Counter	2	No
Time	10.0	Sec
- Section H:** Air Eject Parameter table:
 

	Mv	Md	Air	St	Md	Air	Unit
Start Pos	200.0	50.0					mm
Predelay	9.0	5.0					sec
Act Time	5.0	5.0					sec
	0.0	0.0					sec
- Status Bar:** Shows 'Standby' and 'Executing, Please Wait.....' with a question mark icon.

This page introduce the setting of Eject/Air, details as following :

**A) EJECTOR MODE :**

Move the cursor to the column then press (ENT) or ( $\approx$ ) button to switch to "Standby" "Repeated" Oscillate" and "Holding"

**B) EJECT NUMBER :**

Setting the ejecting numbers of Repeated Mode

**C) SINGLE HOLD TIME :**

Setting the ejector waiting time for the action of robotic arm after ejection if choose the Holding ejecting mode.

**D) STATIC MOLD AIR :**

Enable the function of static mold blowing.

**E) MOVING MOLD AIR :**

Enable the function of moving mold blowing.

**F) EJECTOR PARAMETER :**

Pressure, flow and position of [EjAdv1] [EjAdv2] [EjRet1] [EjRet2]. The restrictions of position setting is [EjAdv1]  $\leq$  [EjAdv2] [EjRet1]  $\geq$  [EjRet2].

**G) AUTO LUBRICATION PARAMETER :**

Enable the Function Of Auto lubrication. And Set up Count And Set up Time For Auto Lubrication On.

**H) AIR EJECT PARAMETER :**

Set up the start position, Pre delay time and Act time of [Mv Md Air] (Blowing from moving mold ) and [St Md Air] (Blowing from static mold ).


**3.07 - QUALITY RECORD PAGE - 0600**

**A) QUALITY RECORD :**

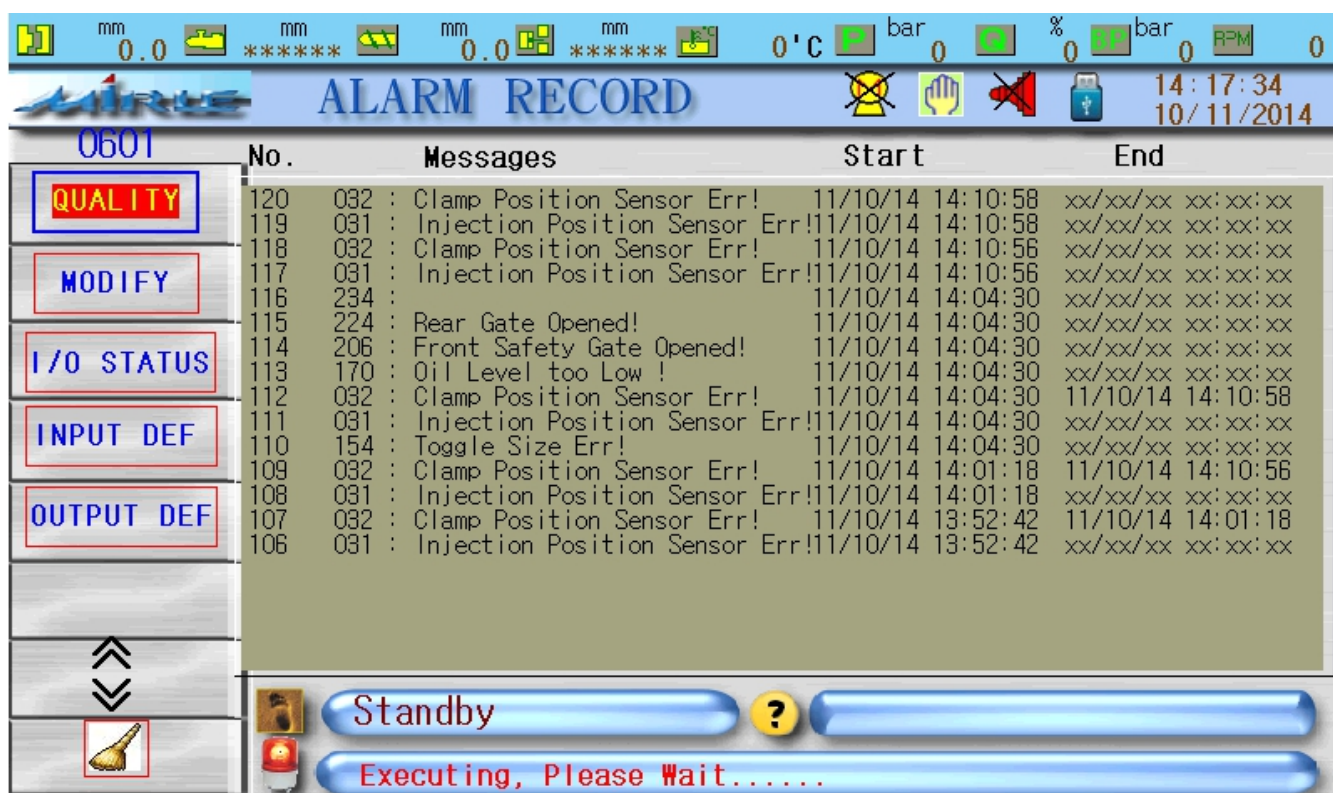
<div> <div>mm 0.0</div> <div>mm *****</div> <div>mm 0.0</div> <div>mm 0.4</div> <div>0'C</div> <div>bar 0</div> <div>% 0</div> <div>bar 0</div> <div>RPM 0</div> </div>									
<div> <div>0600</div> <div>QUALITY RECORD</div> <div>13:03:07</div> <div>04/10/2014</div> </div>									
<div> <div>ALARM</div> <div>MODIFY</div> <div>I/O STATUS</div> <div>INPUT DEF</div> <div>OUTPUT DEF</div> </div>									
No	MdCl	TM	InjectTM	Cushion	MdOp	TM	Cycle	TM	Record Time
57	4.4		1.8	0.0	2.2		16.5		09/20/14 16:41:30
56	4.4		3.3	0.0	2.7		18.5		09/20/14 16:41:00
55	5.1		4.9	0.0	2.5		20.7		09/20/14 16:40:12
54	4.4		2.0	0.0	1.2		25.6		09/20/14 16:39:48
53	3.5		1.8	0.0	2.0		25.7		09/20/14 16:39:18
52	4.2		1.2	0.0	1.1		24.4		09/20/14 16:38:45
51	3.3		6.8	0.0	1.1		24.4		09/20/14 16:38:16
50	3.9		2.2	0.0	2.4		16.5		09/20/14 16:37:46
49	3.5		3.2	0.0	2.6		17.5		09/20/14 16:37:24
48	4.9		1.8	0.0	2.8		17.4		09/20/14 16:37:00
47	3.6		2.2	0.0	1.4		20.1		09/20/14 16:36:35
46	3.5		2.7	0.0	1.0		25.1		09/20/14 16:36:06
45	3.4		2.9	0.0	0.9		25.2		09/20/14 16:35:36
44	3.5		0.5	0.0	1.6		23.4		09/20/14 16:35:05
43	3.9		2.0	0.0	3.7		17.7		09/20/14 16:34:15
<div> <div>Unit</div> <div>SEC</div> <div>SEC</div> <div>mm</div> <div>SEC</div> <div>SEC</div> </div>									
<div> <div>Standby</div> <div>?</div> </div>									
<div> <div>Executing, Please Wait.....</div> </div>									

## SCREEN OPERATION DESCRIPTION

This Page Could Display The Quality Record Of Present 20 Cycles  
(500 Data Record Could Be Saved).


- 1) **No.** : Display the sequence number of recording data of each mold.
- 2) **Cushion/Inj\_Time/Chrg\_End/Charg\_Tm/Cycle\_Tm** : display the quality record values of each mold.
- 3) **Record time** : Display quality record time of each mold.
- 4)  $\Leftarrow \Rightarrow$  : To turn the page, each page shows 20 records.
- 5)  : Under manual mode, press [ENT] key and password to delete all the records.

### B) ALARM RECORD PAGE - 0601



No.	Messages	Start	End
120	032 : Clamp Position Sensor Err!	11/10/14 14:10:58	xx/xx/xx xx:xx:xx
119	031 : Injection Position Sensor Err!	11/10/14 14:10:58	xx/xx/xx xx:xx:xx
118	032 : Clamp Position Sensor Err!	11/10/14 14:10:56	xx/xx/xx xx:xx:xx
117	031 : Injection Position Sensor Err!	11/10/14 14:10:56	xx/xx/xx xx:xx:xx
116	234 :	11/10/14 14:04:30	xx/xx/xx xx:xx:xx
115	224 : Rear Gate Opened!	11/10/14 14:04:30	xx/xx/xx xx:xx:xx
114	206 : Front Safety Gate Opened!	11/10/14 14:04:30	xx/xx/xx xx:xx:xx
113	170 : Oil Level too Low !	11/10/14 14:04:30	xx/xx/xx xx:xx:xx
112	032 : Clamp Position Sensor Err!	11/10/14 14:04:30	11/10/14 14:10:58
111	031 : Injection Position Sensor Err!	11/10/14 14:04:30	xx/xx/xx xx:xx:xx
110	154 : Toggle Size Err!	11/10/14 14:04:30	xx/xx/xx xx:xx:xx
109	032 : Clamp Position Sensor Err!	11/10/14 14:01:18	11/10/14 14:10:56
108	031 : Injection Position Sensor Err!	11/10/14 14:01:18	xx/xx/xx xx:xx:xx
107	032 : Clamp Position Sensor Err!	11/10/14 13:52:42	11/10/14 14:01:18
106	031 : Injection Position Sensor Err!	11/10/14 13:52:42	xx/xx/xx xx:xx:xx

This Page Is To Record The Condition Before/after Alarm Message Occurred And To Provide The Operator Tracking Down The Problems.

- 1) **No.** : It displays the sequence number of each alarm message.
- 2) **Messages** : It displays the alarm number and messages.
- 3) **Start/End** : It displays the start and end time of alarms.
- 4)  $\Leftarrow \Rightarrow$  : To turn the pages, each page contains 20 records (totally saved up to 500 records)
- 5)  : Under manual mode, press [ENT] key and password to delete all the records.





## C) MODIFY RECORD PAGE - 0602

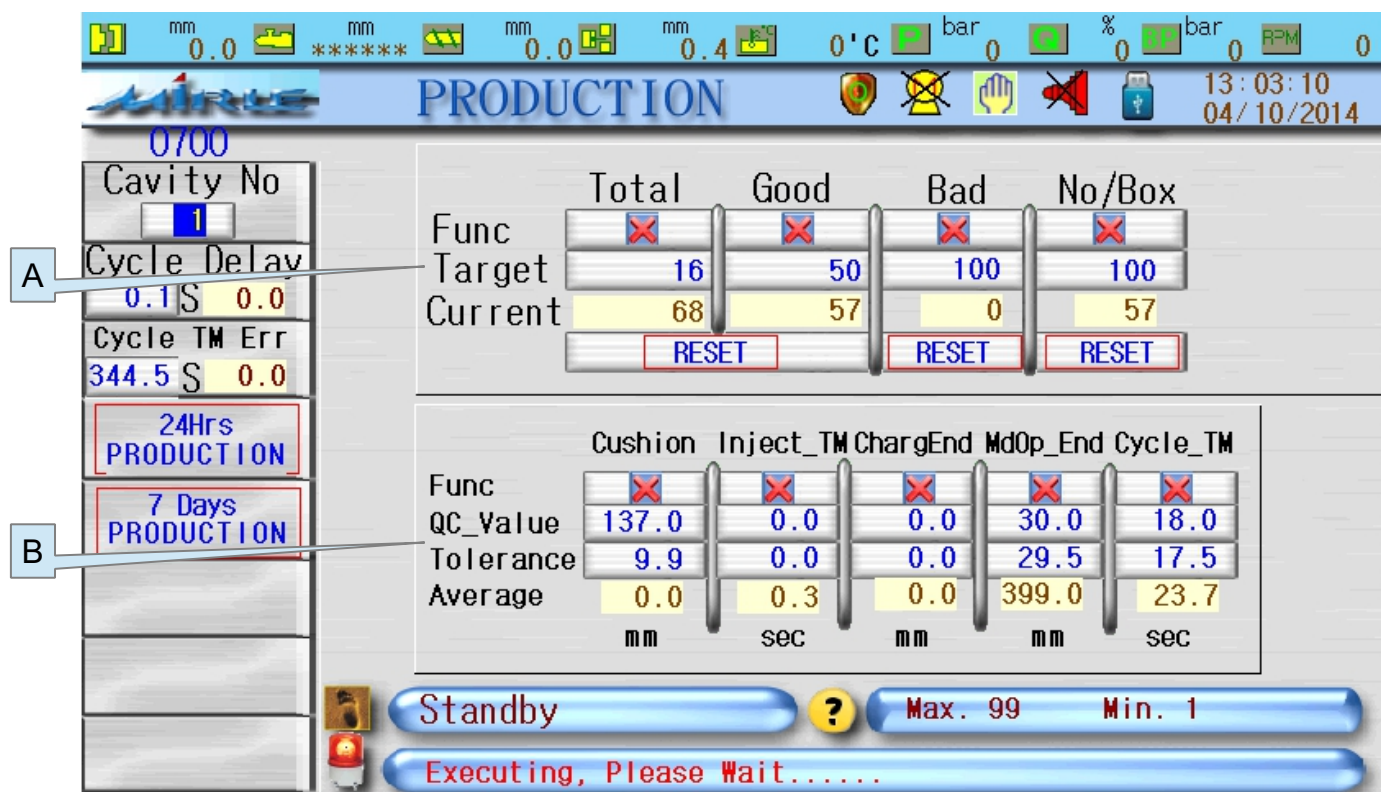
<div> <div>mm 0.0</div> <div>mm *****</div> <div>mm 0.0</div> <div>mm *****</div> <div>0°C</div> <div>bar 0</div> <div>% 0</div> <div>bar 0</div> <div>RPM 0</div> </div> <div> <div>0602</div> <div>MODIFY RECORD</div> <div>14:17:39</div> <div>10/11/2014</div> </div>								
	No.	Mold Name	Md_Sum	Mfy_Item	Time	Old	New	
QUALITY	120	92	1727	42312	11/10/14 13:52:40	0	1	
	119	92	1727	42312	11/10/14 13:52:38	2	0	
ALARM	118	92	1727	46406	11/10/14 13:51:08	60	6553	
	117	92	1727	Heat_Set 7	11/10/14 13:51:06	20	6553	
	116	92	1727	Heat_Set 6	11/10/14 13:51:04	20	6553	
	115	92	1727	Heat_Set 5	11/10/14 13:51:04	20	6553	
I/O STATUS	114	92	1727	Heat_Set 4	11/10/14 13:51:02	20	6553	
	113	92	1727	Heat_Set 3	11/10/14 13:51:02	20	6553	
	112	92	1727	Heat_Set 2	11/10/14 13:51:00	20	6553	
INPUT DEF	111	92	1727	Heat_Set 1	11/10/14 13:51:00	20	6553	
	110	92	1727	42314	11/10/14 13:50:34	0	1	
	109	92	1727	42314	11/10/14 13:50:34	2	0	
OUTPUT DEF	108	92	1727	42312	11/10/14 13:49:56	0	1	
	107	92	1727	42312	11/10/14 13:49:54	2	0	
	106	92	1727	42311	11/10/14 13:49:54	0	1	
<div> <div>Standby</div> <div>Executing, Please Wait.....</div> </div>								

This Page Shows 20 Record of Forming Parameter Which Have Been Modified (Total 500 Could Be Saved).

Serial Numbers, Mold Name, Accumulated Mode Numbers, Modifying Parts, Modifying Time, Old Values And New Values

- 1) **No.** : It displays the sequence number of each message.
- 2) **Name of mold numbers** : Name of modifying machine mold.
- 3) **Accumulated mode numbers** : Total mode numbers when modifying
- 4) **Modifying parts** : The name of the modifying parameters
- 5) **Modifying time** : Time when modifying.
- 6) **Old values** : Values before modifying
- 7) **New values** : To display new values 28
- 8)  : To turn the pages, each page contains 20 records.
- 9)  : Under manual mode, press [ENT] key and password to delete all the records.

### 3.08 - PRODUCTION PAGE - 0700



This page introduce the setting of Production data, details as following :

#### A) PRODUCTION SCREEN :

**Including parts :** [Total] (Total production number) [Good] (Good numbers) [Bad] (Bad numbers) and [Box No.] (Box numbers).

**Function :** It is the switch to control the numbers from above parts; that is the alarm will be triggered when the numbers have been achieved and the machine will be stopped automatically.

**Target :** The setting values for achieving the correspond numbers of production target.

**Reset :** Move the cursor the corresponding item, then press[E NT] to reset the corresponding current value to zero.

#### B) QUALITY CONTROL :

**Including parts :** [Cushion] (Minimum position of injection) [Chrg\_End] (the end position of charging) [MdOp\_End] (the end position of mold opening) and [Cycle\_Tm] (Cycle Time).

**Function :** It is the switch to control the quality from above four parts, when exceed the range of quality tolerance, judged as bad quality.

**QC Value :** It is the settings for the corresponding absolute value of each quality control item.

**Tolerance :** It is the settings for the corresponding tolerance of each quality control item.

**For example :** QC value of "Cushion" set to be 10.0mm, Tolerance" set to be 0.5mm, when present value is 11.2mm the difference with QC value is 1.2mm( $11.2 - 10.0 = 1.2$ ) and obviously exceed the tolerance 0.5 mm , judged to be bad.

**Average :** It shows the average value of continue 30 molds.

**OTHER SETTING :**

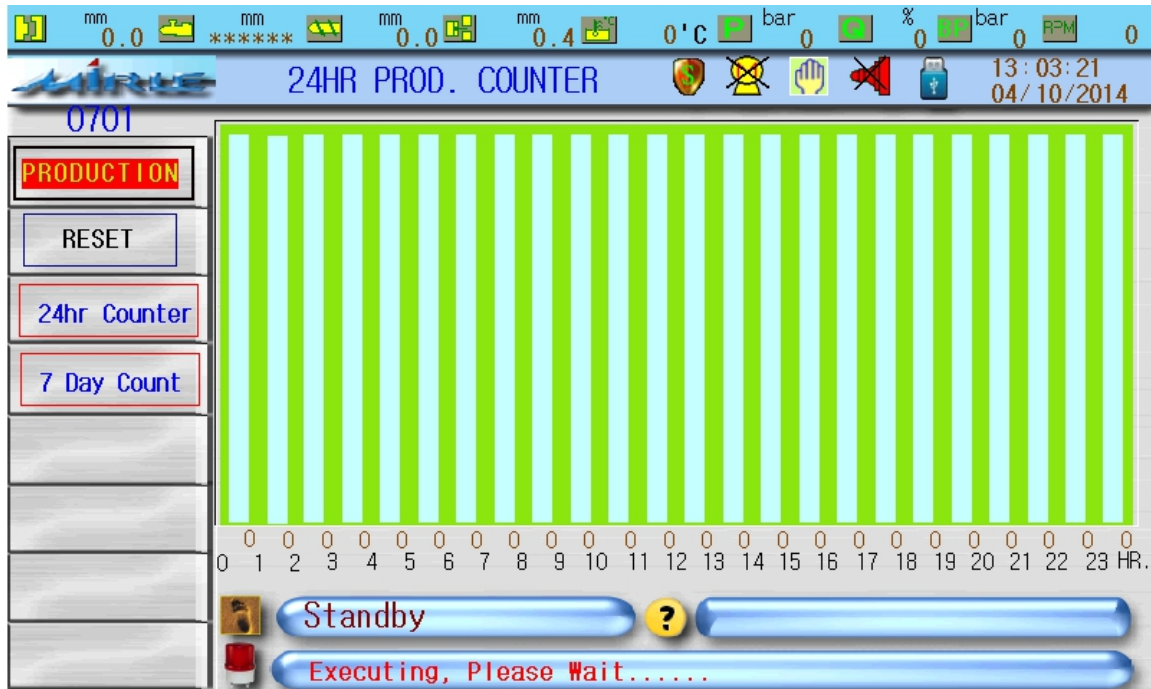
**Cavity No. :** It is the settings for the cavity numbers in one Mold.

**Cycle Delay :** It Is the Settings for the auto cycle delay time.

**Cycle Tm Err.** : It Is the setting for the cycle time error (total cycle time).

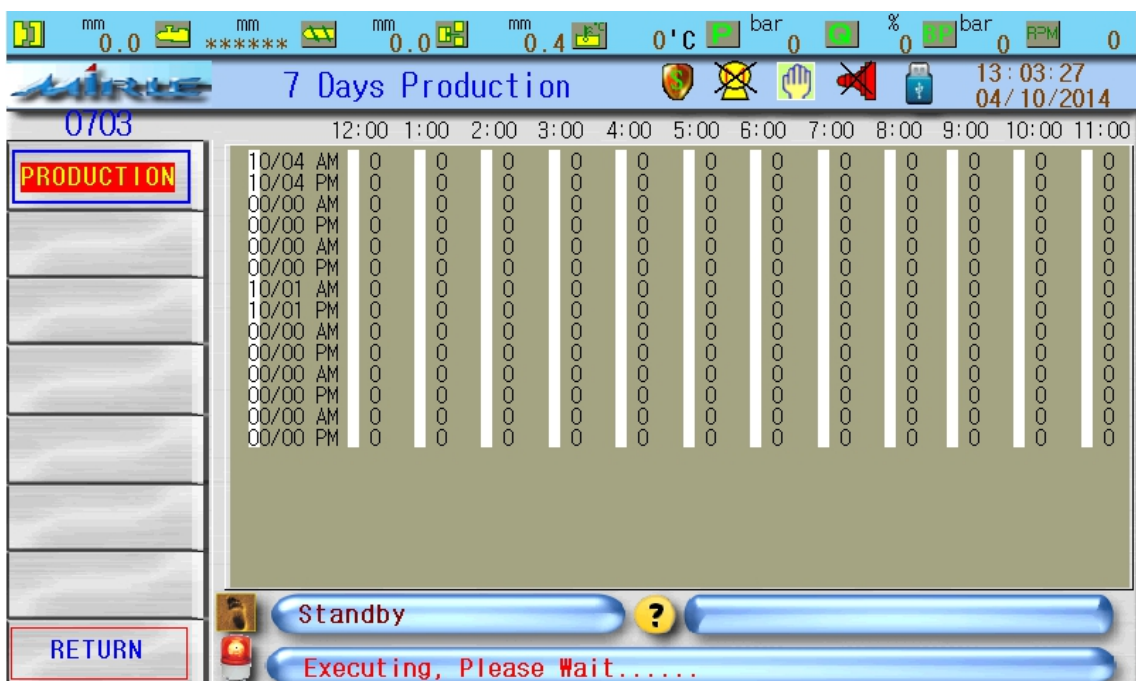
If cycle not complete set cycle time than error occur.

**D) 24HR. PRODUCTION COUNTER PAGE - 0701**



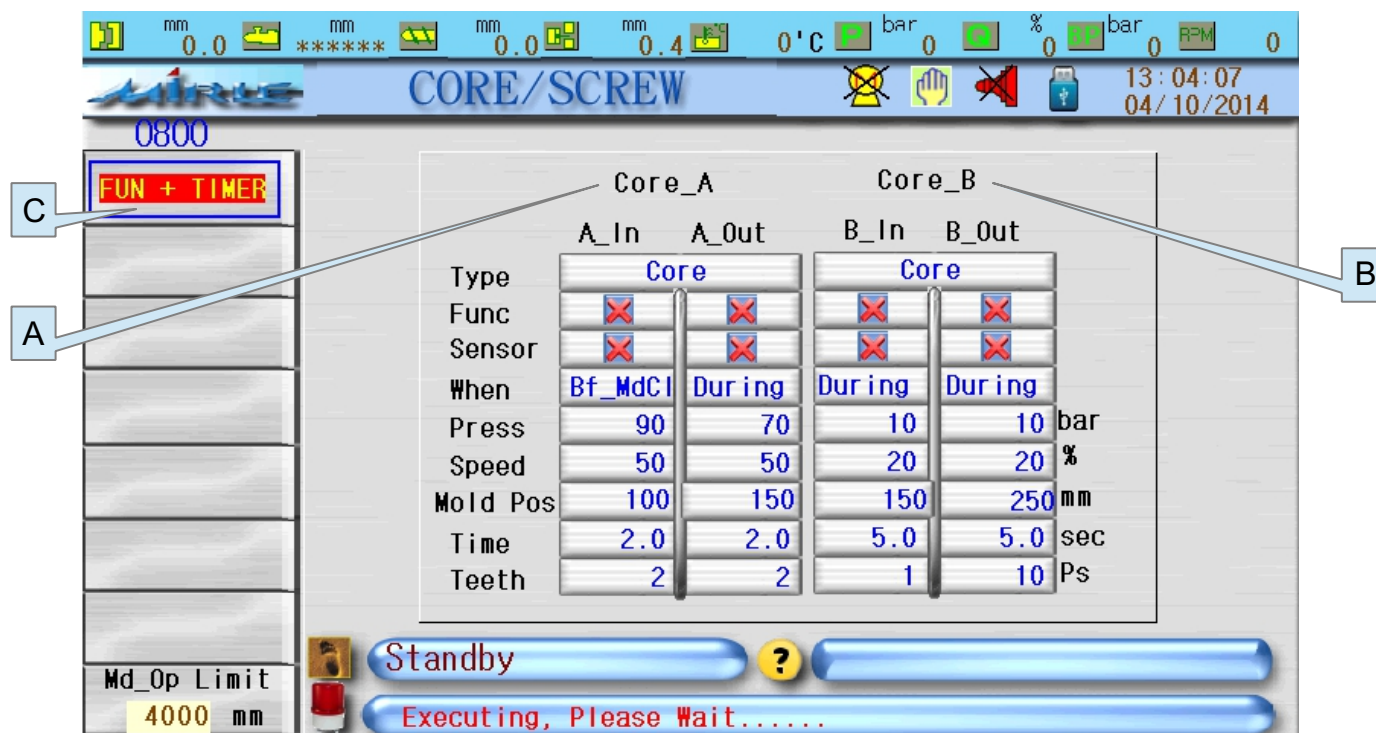
**This page is to display 24hr. production data.**

**E) 7 DAYS PRODUCTION COUNTER - 0703**



**This page is to display the 7 days production data.**

### 3.09 - CORE PAGE - 0800



This page introduce the setting of core details as following.

#### A) Core A :

**Type** : Press the corresponding [ENT] or [ $\approx$ ] button to choose Core" or Screw" for a moving type.

**Func** : Enable the corresponding function to work.

**Sensor** : Choose limit switch for the position limitation of core or screw.

**When** : Three choices when [A in] : Bf\_MdCl " [Before Mold Close] " During " (Mold Closing) and Af\_MdCl"

(After Mold Close); [A out] has three choices as well : Bf\_MdOp " (Before Mold Open) "During" (Mold Opening)

Af\_MdOp" (After Mold Open).

**Mold Pos.** : If choose During", it needs stop mold clamping and switch core to activate when the mold are at the position where we set.

**Time** : When core type is Core and not choose position limitation switch this is set to be working time on the other hand is the protection time of activating.

**Teeth** : When choose screw" type , correspond column can set up in/out numbers of screw pulses.

#### B) Core B : The setting procedure is similar to Core A.



## C) FUNCTION + TIMER PAGE - 0102

**Function Timer**

0102

CLAMP PARA	UNIT PARA	EJECT PARA	SPECIAL PARA
Clmp Ls/Time <input checked="" type="checkbox"/>	Carr Adv TIME	Eject ADV TIME	Skback Af COOLING <input checked="" type="checkbox"/>
Clamp Time 0.5S 0.0	Carr_Ret TIME	Eject RET TIME	Carrageback Af Charge <input checked="" type="checkbox"/>
			Cooling Af Charge <input checked="" type="checkbox"/>
			D2D Cycle Time <input checked="" type="checkbox"/>

Standby ?

Executing, Please Wait.....

This page introduce the setting of function + timer details as following.

Contact machine supplier for above page parameter setting.

### 3.10 - CARRIAGE (INJECTION UNIT) PAGE - 1100

**1100 CARRIAGE/PURGE**

**Auto\_Car\_Ret** ☒

**Carr\_Ret Prot** 99.9 S 0.0

**Auto\_Purge** ☒

**Purge Num.** 2 0

**Unit Load** ☒

**CarAdv2 CaAdv1**

Press	30	140
Speed	30	51
Pos	5.0	5.0
Time	5.0	0.0

**CarRet1CarRet2**

Press	70	100	bar
Speed	70	10	%
Pos	100.0	100.0	mm
Time	5.0	0.0	sec

**Auto Purge Parameter**

	Inj2	Inj1	SuckBk	Charge	
Press	30	30	30	30	bar
Speed	30	30	30	30	%
Pos	100.0	100.0	120.0		mm
Time				2.0	sec
				0.0	

**Standby** ? **Executing, Please Wait.....**

This page introduce the setting of function + timer details as following.

#### A) CARRIAGE ADV-RET PARAMETER :

Before to execute carriage movement, go to the left side of the page to switch ON the “AT\_Carr\_Ret.” (Automatic Carriage Return)” function and choose “Carr\_Ret Mode” (Carriage Return control Mode, [Time] or [Position]) and “Carr\_Ret Prot”(Carriage Return Protection time).

In this screen you can set up the pressure, flow and position of [CarAdv1] (Carriage Advance 1) [CarAdv2] [CarRet1] (CarRet1) and [CarRet2], the restrictions of position setting is  $[CarAdv1] \geq [CarAdv2]$   $[CarRet1] \leq [CarRet2]$

#### B) AUTO PURGE PARAMETER :

Before executing automatic purging, check if under manual control mode, then go to the left side of screen to open the function of “Auto\_Purge”, key in the numbers of Purge number” then could enter the values of the pressure, flow, position and time of [Inj1] [Inj2] [Suckback] and [Charge].

**Note 1 :** Under automatic purging motion, back pressure control will not be executed. (Whether been set up or not)

**Note 2 :** Automatic purging process usually are as following: inject (Fast speed → slow speed), suck back (according to the position where operator set) charging(time which operator set); then inject again, repeat till fulfill the setting numbers.

**AT\_Carr\_Ret :** Enable the function of carriage return when running under semi or auto mode.

**Carr\_Ret Prot :** Setting the protective time for the action of carriage.

**Auto\_Purge :** Select the function of purge movement.

**Purge No. :** Setting the numbers of purge movement.

## 3.11 - MOLD FILE PAGE - 1200

The screenshot shows the 'MOLD FILES' screen with the title '1200' at the top left. The top status bar displays various units: mm 0.0, mm 0.0, mm 0.0, mm 0.4, 0°C, bar 0, %, bar 0, RPM 0. The main area is divided into several sections:

- Left Panel:** Contains buttons for 'Copy Fm' (set to 'Controller'), 'Copy To' (set to 'USB'), 'Start No' (set to '1'), 'Length' (set to '1'), a 'COPY' button, up/down arrow buttons, 'Load/Del No' (set to '1'), and 'LOAD'/'DEL' buttons.
- Top Right:** Displays 'Curr Materi' as 'PP', 'Curr Mold' as '92', 'Saving Materi' as 'DEFAULT', and 'Saving Mold' as 'DEFAULT'. There is a 'SAVE' button.
- Table:** A table with columns 'No.', 'Mold Name', and 'Date'. It lists mold files with their IDs, names, and timestamps.
- Bottom:** Features a 'Standby' indicator, a question mark icon, and a progress bar with the text 'Executing, Please Wait.....'.

No.	Mold Name	Date
000:MH6117	.MLD	05/21/2014 17:09
001:2A	.MLD	08/30/2014 13:01
002:92	.MLD	08/30/2014 13:01
003:D8874AR	.MLD	08/30/2014 14:49
004:ESS	.MLD	09/03/2014 11:08
005:		
006:		
007:		
008:		
009:		

This page introduce the setting of mold file, details as following.

**Copy Fm:** resource device of copying files (Controllers or USB).

**Copy To :** Destination device of copying files (Controllers or USB).

**Start No. :** Start number of copy files.

**Length :** Total numbers of copying files.

**Copy :** Press [ENT] key to start copy files, but the system will check if machine under manual mode.

⏮⏭ : To look up copying files, press [⏮⏭] to turn pages.

**Load/Del No. :** The sequence number of file to be loaded or deleted.

**Load or Del :** Press [ENT] to execute the function of [LOAD] or [DEL], but the system will check if machine under manual mode.

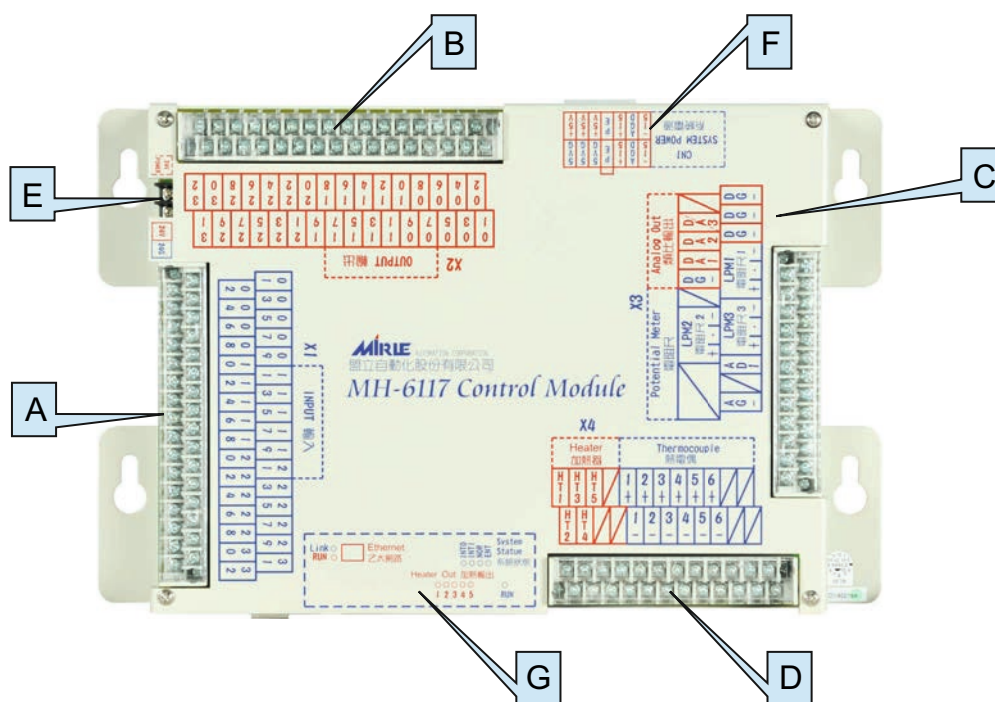
# **CHAPTER - 4**

## **System Wiring**

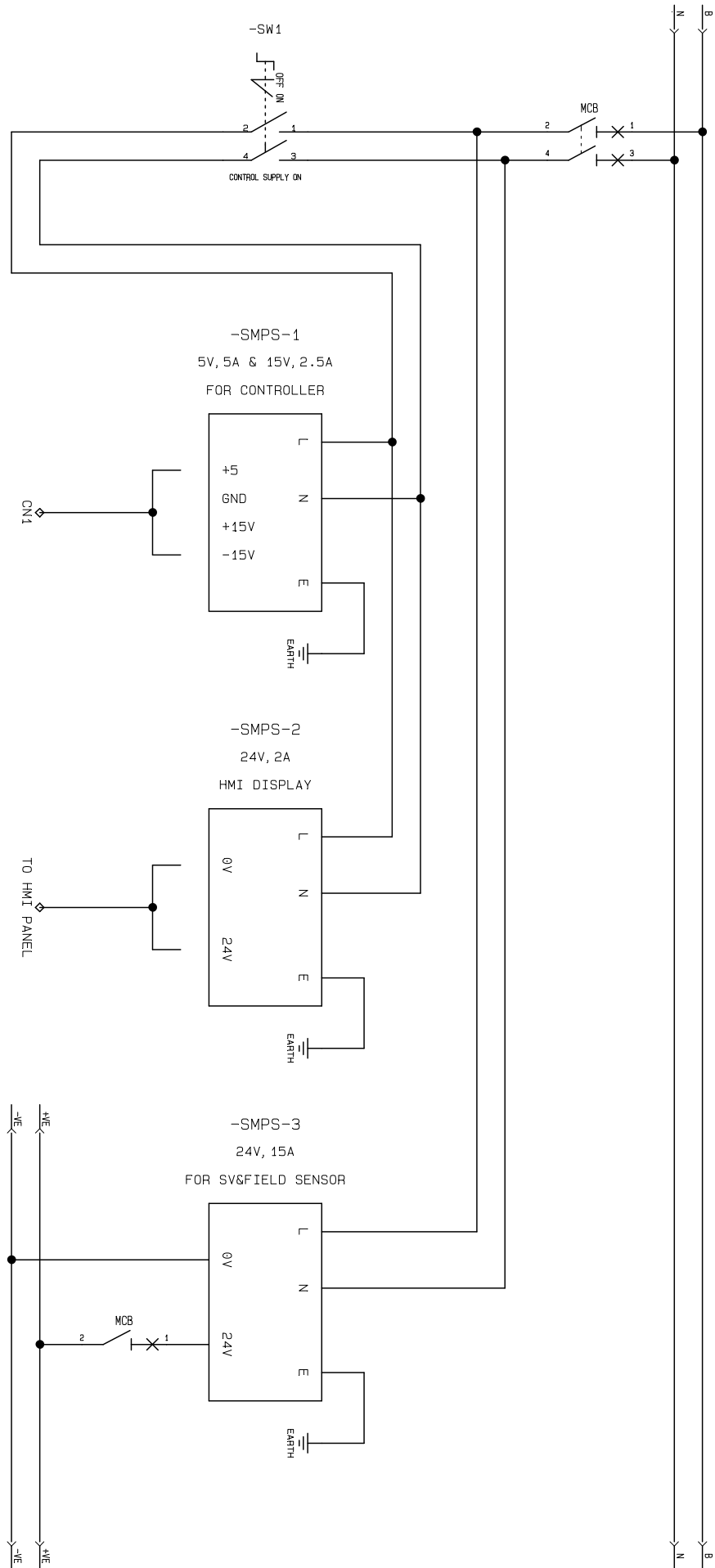
4.1 - Wiring Diagram

4.2 - Proportional (PQ) Card Wiring

## 4.1 - WIRING DIAGRAM

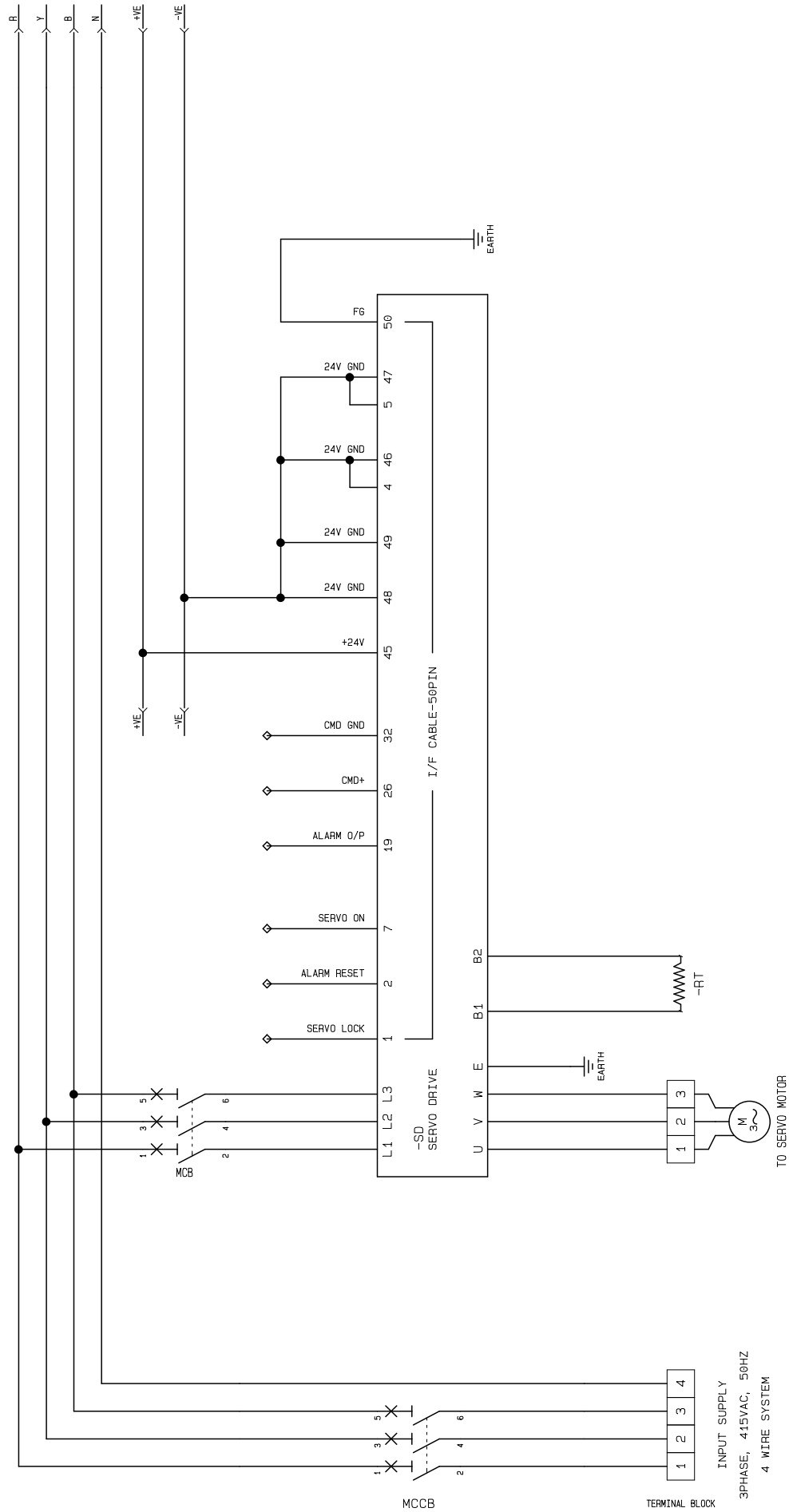


- A)** X1-Input NPN (32 channels)
- B)** X2-Output NPN (32 channels)
- C)** X3-Analog Input (Linear Potentiometer - 3 channels)  
     Analog Input (Pressure Transducer - 1 channel)  
     X3-Analog Output (Digital to Analog - 3 channels)
- D)** X4-Thermocouple (J or K type Input - 5 channels & 6 no. Oil Temp.)  
     Heater Output NPN (5 channels)
- E)** 24V DC Power Connection
- F)** CN1 - System Power
- G)** System Status (Run, Heater Output, Ethernet Communication & System Indication LED)

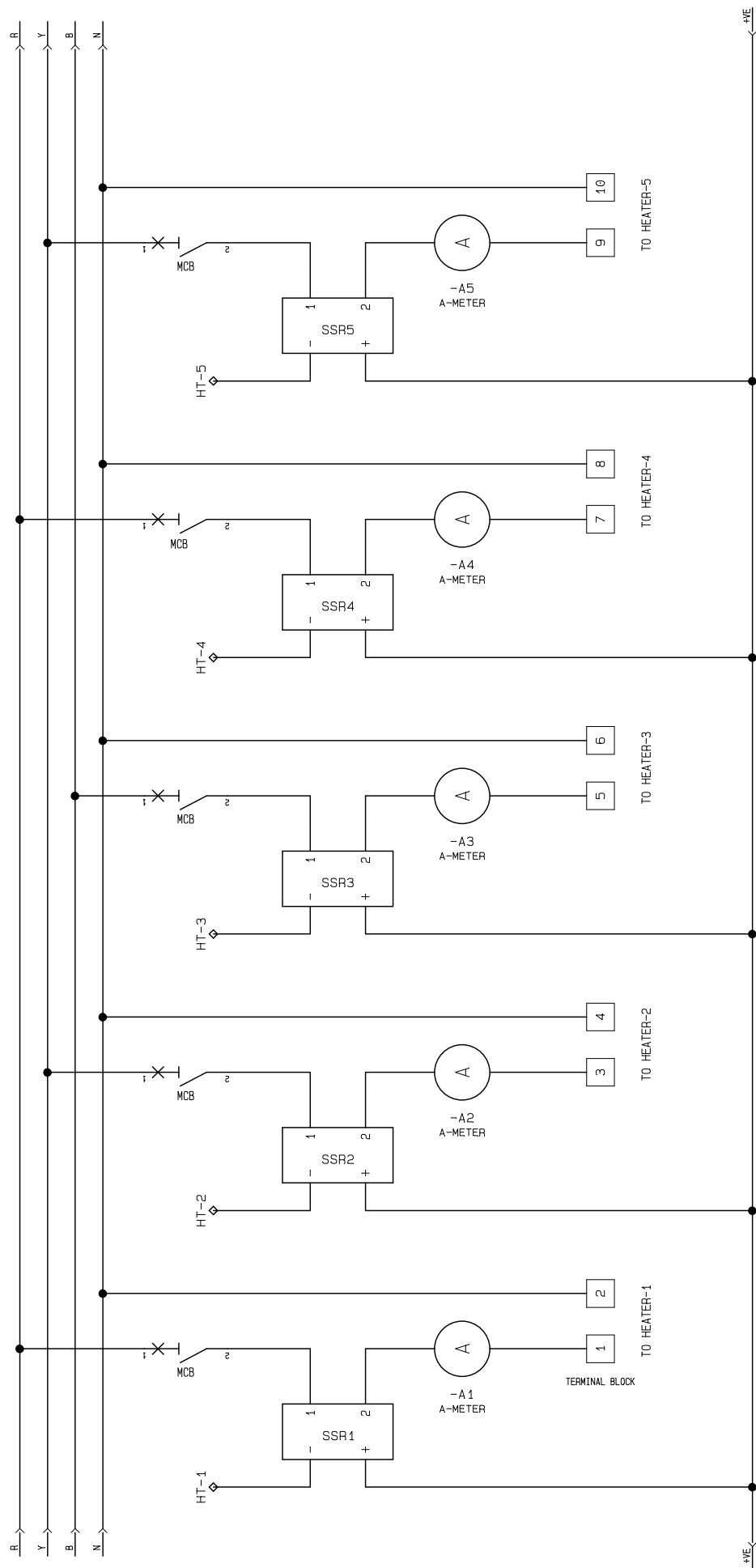


Note : Above 40 Ω Pressure / Flow proportional valve : Required 48V DC ~ 5Amp Power supply

# ESS SERVO DRIVER WIRING



HEATER WIRING

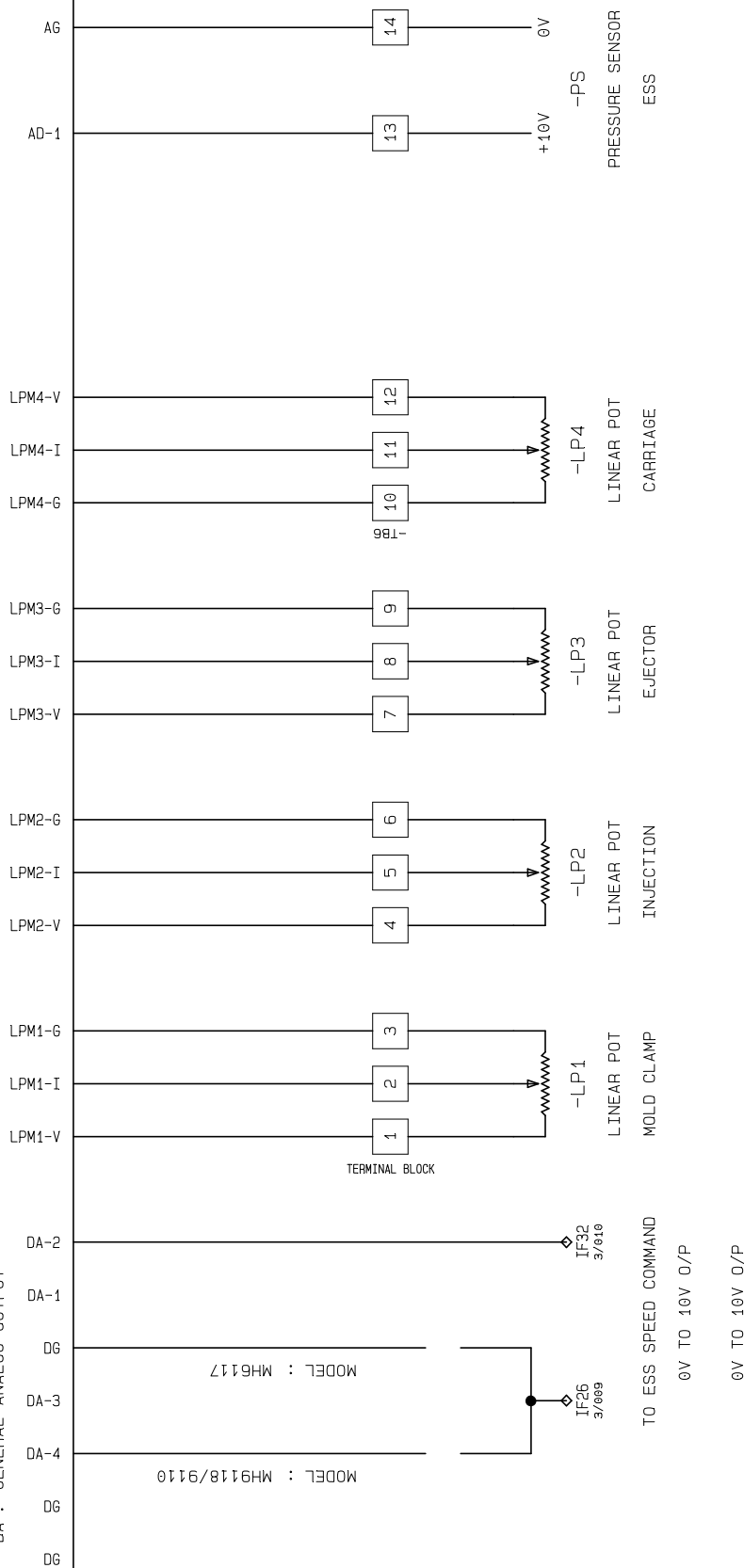




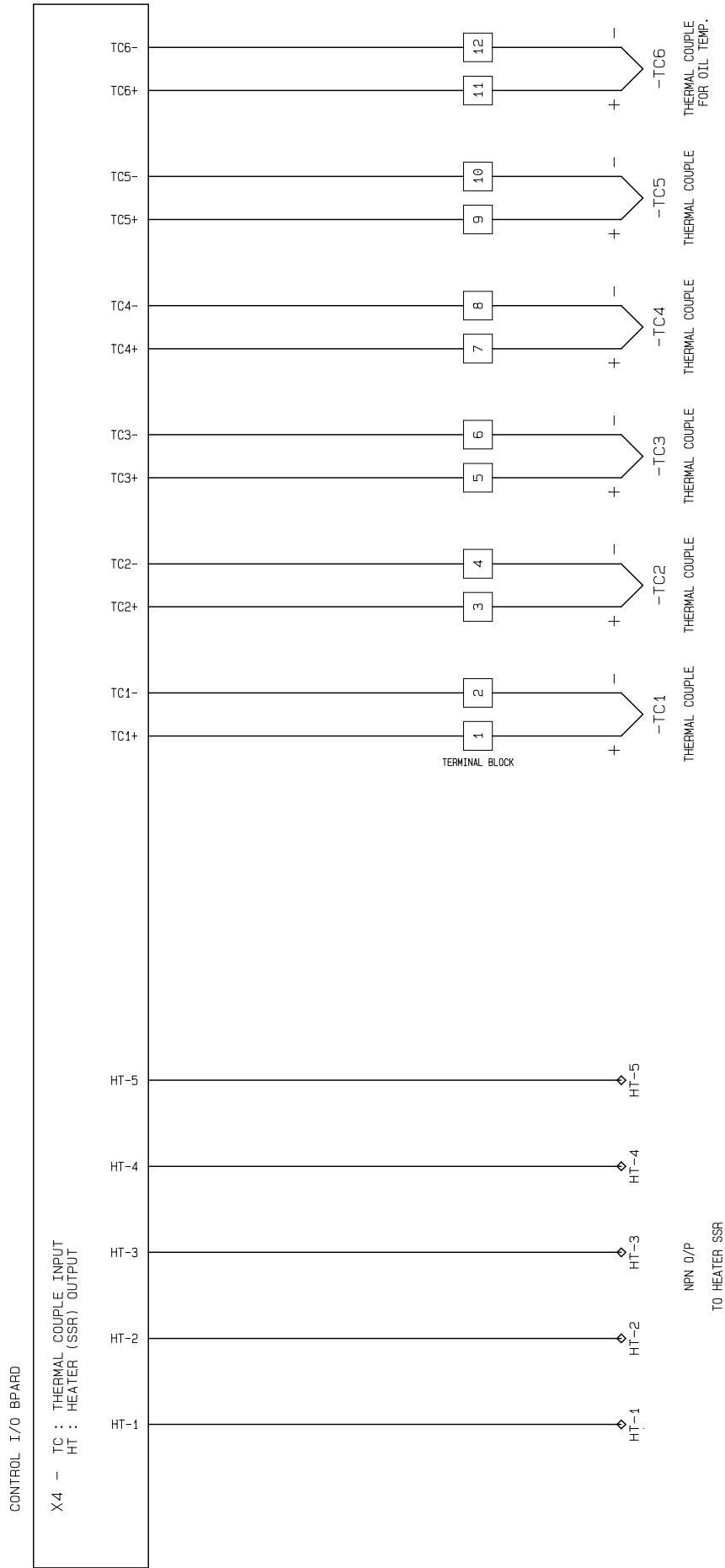
# ANALOG INPUT/OUTPUT WIRING

CONTROL I/O BOARD

X3 - LPM : LINEAR POTENTIOMETER INPUT  
AD : GENERAL ANALOG INPUT  
DA : GENERAL ANALOG OUTPUT

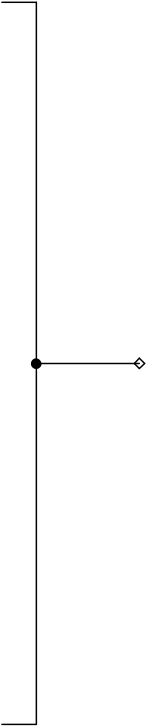
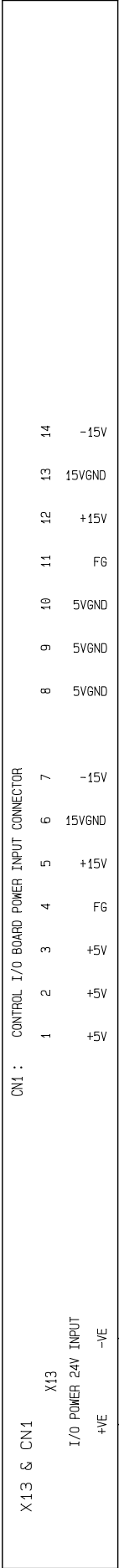


THERMOCOUPLE WIRING

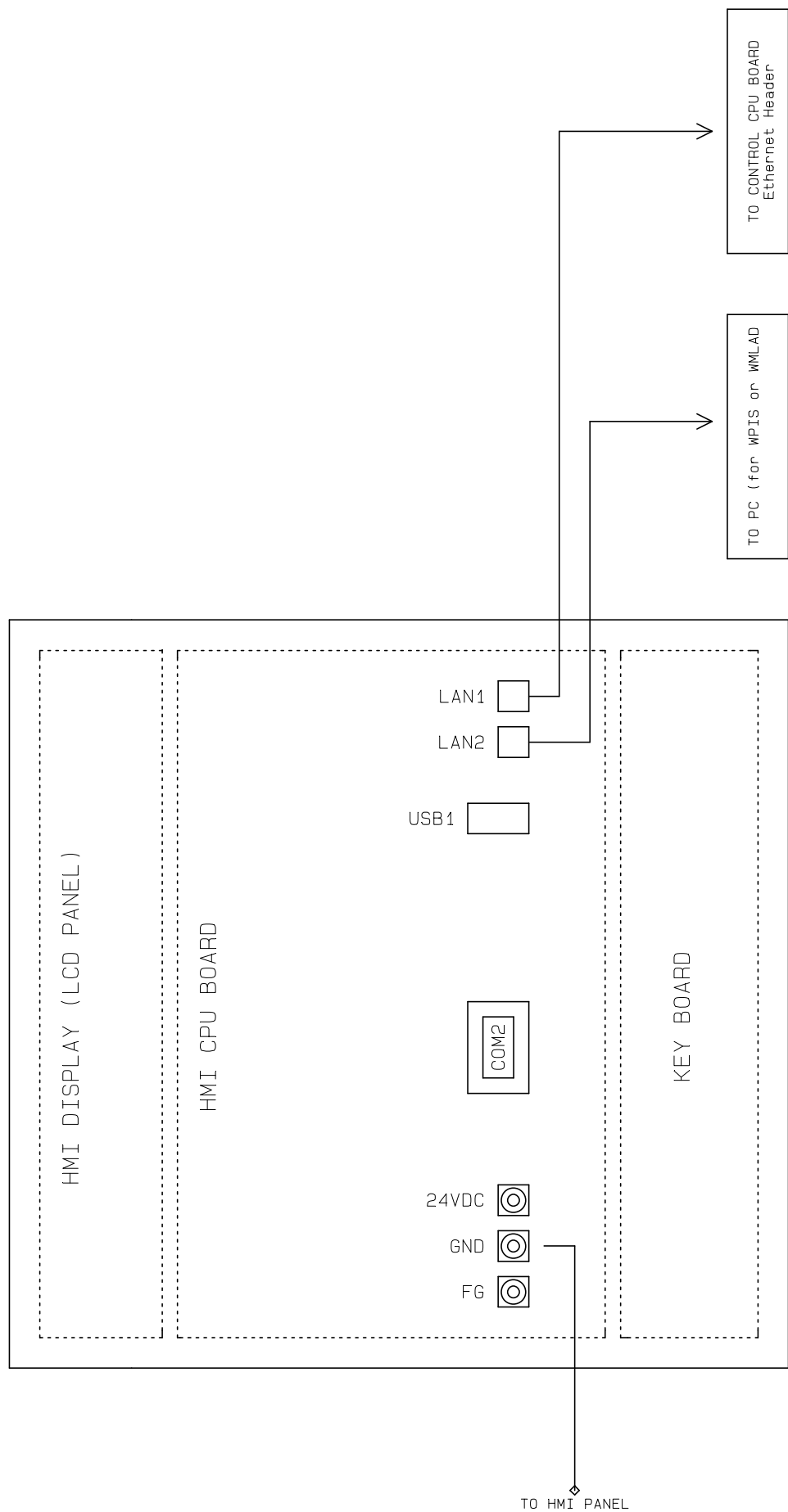


SYSTEM PLC POWER SUPPLY WIRING

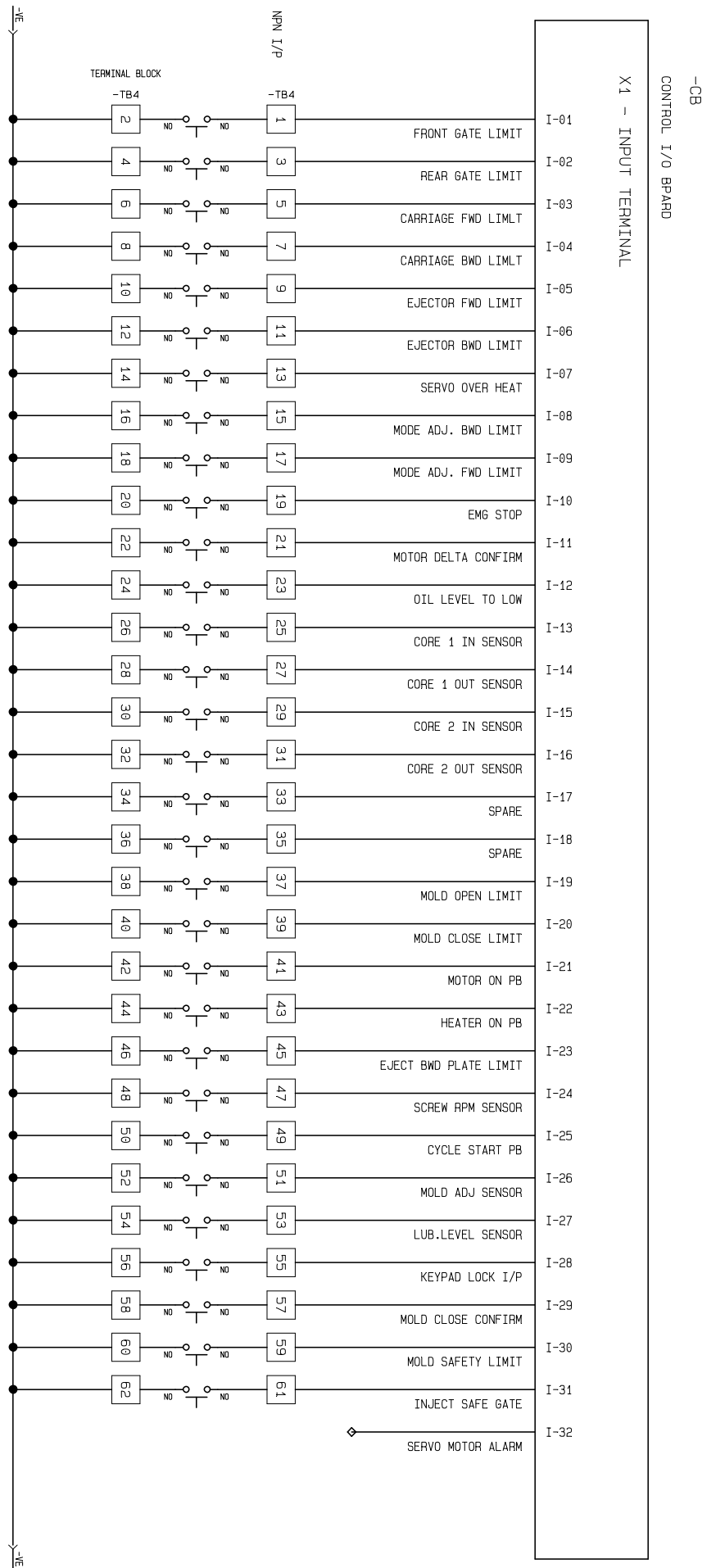
CONTROL I/O BOARD



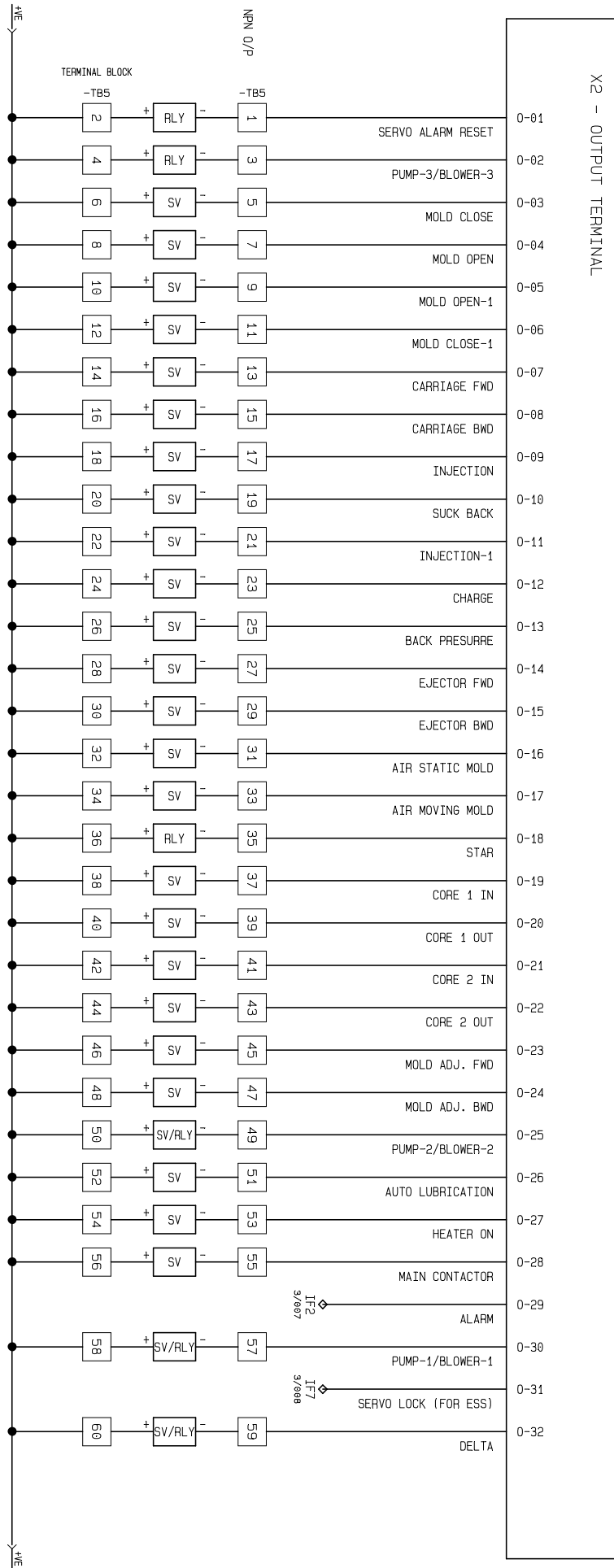
HMI DISPLAY WIRING



INPUT WIRING



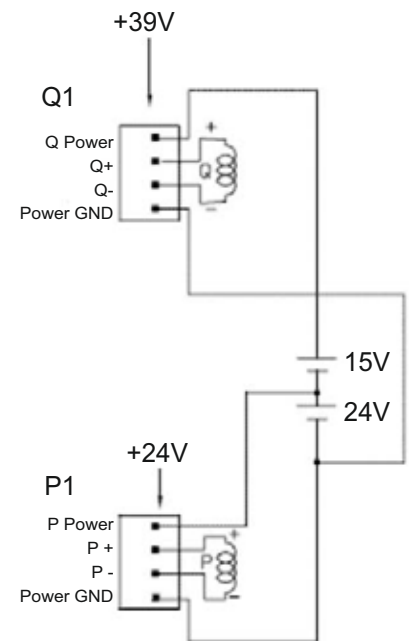
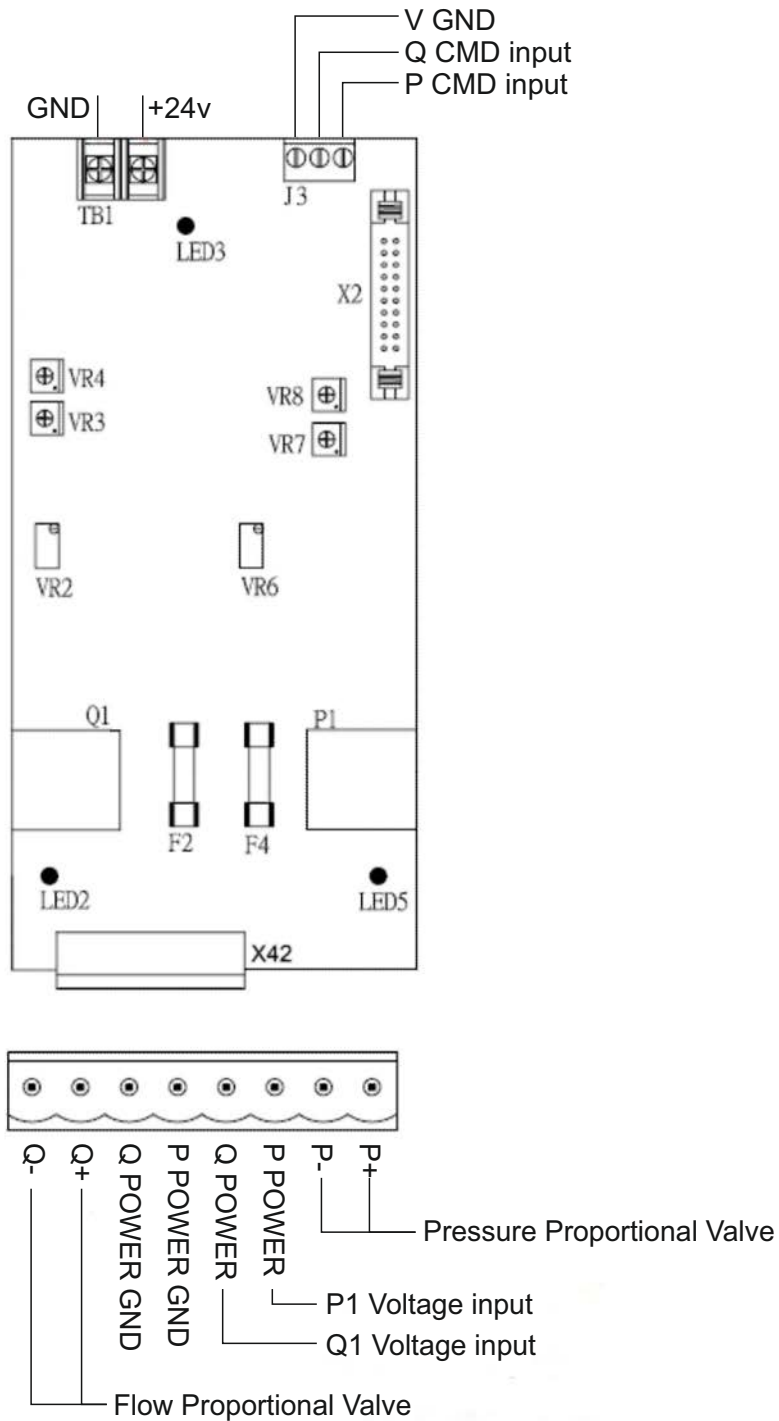
OUTPUT WIRING



-CB  
CONTROL I/O BOARD

X2 - OUTPUT TERMINAL

## 4.3 - PROPORTIONAL (PQ) CARD WIRING



**Note :** Above 40  $\Omega$  Pressure / Flow proportional valve : Required 48V DC ~ 5Amp Power supply

# **CHAPTER - 5**

## Troubleshooting

### 5.1 Alarm Message & Solution



## 5.1 - ALARM MESSAGE &amp; SOLUTION

Alarm No.	Alarm Message	Alarm Solution
008	Barrel Temperature too Low !	1) Actual temperture not achive the set temperture
019	Barrel Temperature too High !	1) Actual temperture is very high more than the set temperture & up tolerance
020	Oil Temperature too High !	1) Oil temperture is very higher than the set temperture
021	Injection Protection Time Error !	1) Injection safety time is not set or low
022	Charge Protection Time Error !	1) Charging safety time is not set or low
025	Mold Safty LS On Error !	1) Mold safety Proxy/Limit switch input on
026	Mold Eject Bwd Plate Error !	1) Ejector safety Proxy/Limit switch input on
030	Thermocouple Broken!	1) Thermocouple connection is wrong. 2) Thermocouple type (k or j) selection is wrong
031	Injection Position Sensor Err!	1) Injection linear scale selection is on 2) injection linear scale wiring is wrong
032	Clamp Position Sensor Err!	1) Clamp linear scale selection is on 2) Clamp linear scale wiring is wrong
033	Ejector Position Sensor Err!	1) Ejector linear scale selection is on 2) Ejector linear scale wiring is wrong
042	Reach Total Product Number!	1) Total product counter set value is achive
043	Reach Good Product Number!	1) Good Product counter set value is achive
044	Reach Bad Product Number!	1) Bad product counter set value is achive
049	Carriage Position Sensor Err!	1) Carriage linear scale selection is on 2) Carriage linear scale wiring is wrong
078	I/O Simulating ...	1) I/O is on from i/o simulation page
079	I/O Redirecting ...	1) I/O is change from i/o redirecting page
081	Core In Sequence Err!	1) Core in sequence selection wrong
082	Core out Sequence Err!	1) Core out sequence selection wrong
151	Communication Err !	1) Plc and HMI ethernet cable is not connected proper 2)System Power Supply (5-15Vdc) Off
161	Emergency Stop!	1) Emergency stop button input is on
170	Oil Level too Low !	1) Oil level input is on
172	Lubrication Oil Low	1) Lubrication Oil level input is on
176	Auto lubrication Fail !	1) lubrication input is not come in set timer of auto lubrication
178	Mold Low Pressure Protection !	1) Mold low pressure protection time is not set or low 2) Mold close valve is not work
180	Cycle Alarm	1) Cycle time is not set or low
183	Motor Overload !	1) Motor amp. Is goes to high 2) Check motor star delta time 3) Motor delta comfirm input X11 off.
185	High Pressure Protection Err !	1) Mold high pressure protection time is not set or low 2) mold close valve is not work
186	Front Gate Protection Err !	1) Front gate input X1 is off
200	Servo Error !	1) Servo motor Alalrm X32 is off. 2) Servo driver some alarm occur
202	Servo Over Heat Err !	1) Servo motor temp. Input X7 is off 2) Servo motor temp. Is high or Low
203	Motor isn't Running Or Started !	1) Motor is off
206	Front Safety Gate Opened!	1) Front safety gate X1 is off
217	Unreach Normal Temperature !	1) Actual temperture is not achive the set temperture
222	Screw Protection Err !	1) Screw protection function is On. (Page.200)
223	Mold Open over Time !	1) Mold open protetion time is set low.(Page.300)
224	Rear Gate Opened!	1) Rear gate input X2 is off
237	Carriage BWD Protect Err !	1) Carriage protection time is not set or low
238	Mold Adj Thick L.S. On !	1) Mold thick input X8 is on
239	Mold Adj Thin L.S. On !	1) key lock input X9 is on
241	Key Down is Locked!	1) key lock input X28 is on
248	Eject Adv not in Position!	1) Ejector is not in position/Time is not over
249	Eject Ret not in Position!	1) Ejector is not in position/Time is not over
261	Barrel Temperature too High !	1) Actual temperture is very high more than the set temperture & up tolerance
281	Mold Open is not in Position!	1) Mold open 5 position is not achive the actual mold Position.
287	Reach BOX Number !	1) Total box counter value is achive or not set

## PRODUCT RANGE

### MH-6117



#### FEATURES

- Display unit CPU : ARM9 266MHz 32 bits
- Control unit CPU : RISC 140MHz 32 bits
- 7.4-inch 800 x 480 color TFT LCD long screen, LED back light
- 6 Ranges PID temperature control (control accuracy  $\pm 1^{\circ}\text{C}$ )
- 3 Sets of transducer input (16 bit)
- 1 Set of A/D pressure sensing input (16 bit)
- 3 Sets of D/A proportional valve output (16 bit)
- 32 Digital inputs • 32 Digital outputs
- 1 USB interface

### MH-9118



#### FEATURES

- Display unit CPU : ARM9 266MHz 32 bits
- Control unit CPU : RISC 140MHz 32 bits
- 8.4 inch 800 x 600 color TFT LCD
- 8 Ranges of PID temperature control (control accuracy  $\pm 1^{\circ}\text{C}$ )
- 4 Sets of transducer input (16 bit)
- 2 Sets of A/D pressure sensing input (16 bit)
- 4 Sets of D/A proportional valve output (16 bit)
- 32 Digital inputs • 32 Digital outputs (expandable to 48/64 points)
- 2 USB interfaces

### MH-9110



#### FEATURES

- Display unit CPU : ARM9 266MHz 32 bits
- Control unit CPU : RISC 140MHz 32 bits
- 10.4 inch 800 x 600 color TFT LCD
- 8 Ranges of PID temperature control (control accuracy  $\pm 1^{\circ}\text{C}$ )
- 4 Sets of transducer input (16 bit)
- 2 Sets of A/D pressure sensing input (16 bit)
- 4 Sets of D/A proportional valve output (16 bit)
- 32 Digital inputs (expandable to 48/64 points)
- 32 Digital outputs (expandable to 48/64 points)
- 2 USB interfaces

### MQ- 200



#### FEATURES

- Display unit CPU : X86 800MHz 32 bits
- Control unit CPU : RISC 140MHz 32 bits
- 10.4 inch 600 x 800 16 bit color TFT LCD (Vertical)
- 8 Ranges of PID temperature control (control accuracy  $\pm 1^{\circ}\text{C}$ )
- 4 Sets of transducer input (16 bit)
- 2 Sets of A/D pressure sensing input (16 bit)
- 4 Sets of D/A proportional valve output (16 bit)
- 32 Digital inputs (expandable to 48/64 points)
- 32 Digital outputs (expandable to 48/64 points)
- 2 USB interfaces

## LINEAR SCALE



## PRESSURE TRANSDUCER



**GEFRAN**

## ROBOT



Performance, Speed, Stability and Durability... All key attributes of robot make them ideally suitable for sprue separation and part removal on Injection Molding Machines.

- Low maintenance, Higher stability and reliability due to lubricating pneumatic drive.
- Fast responsive and reliable pneumatic control
- High precision and low weight

**Ana robot**  
for injection molding machinery

**NOTE**

[illegible]



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